



Appendix 3

Archaeological Assessment

BHL–OTA designation change: archaeological assessment

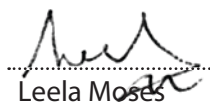
**report to
Transpower New Zealand Ltd**

Leela Moses

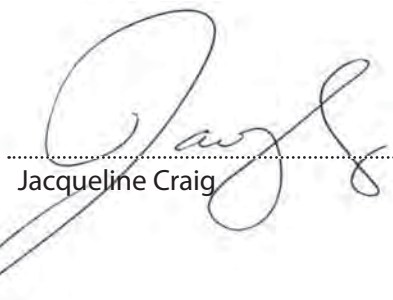
BHL–OTA designation change: archaeological assessment

report to
Transpower New Zealand Ltd

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Reviewed by:


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BHL–OTA designation change: archaeological assessment

1 Introduction

Transpower propose to amend the route of the Brownhill Road to Otahuhu (BHL–OTA) Cable Designation in Auckland (Designation 8517 in the Auckland Unitary Plan (AUP)). The purpose of this designation is the construction, operation and maintenance of a double-circuit underground 220 kV cable as part of the upper North Island Grid Upgrade Project, to convey electricity between the Otahuhu Substation and the Brownhill Road substation, and ancillary activities. Transpower is preparing a Notice of Requirement (NOR) to alter the designation. The new designation runs alongside a number of recorded archaeological sites: R11/1933 (urupā); R11/2323 (midden); R11/2554 (site of Stancombe Cottage); R11/2440 (church cemetery); R11/2154 (gorse hedge and ditch); R11/2333 (dry-stone wall); R11/2461 (Hampton Park). Hampton Park is also listed in the Auckland Unitary Plan (AUP) (ID 1343, Historic Heritage Schedule Category A*). This archaeology and heritage assessment forms part of the suite of technical reports prepared to support the Notices of Requirement (NoR) being sought by Transpower New Zealand under the Resource Management Act 1991 (RMA). John Sutherland of Transpower commissioned CFG Heritage Ltd to prepare this report outlining archaeological and heritage constraints on the existing designation, as well as the alterations.

1.1 Statutory requirements

All archaeological sites, whether recorded or not, are protected by the provisions of the Heritage New Zealand Pouhere Taonga Act 2014 and may not be destroyed, damaged or modified without an authority issued by Heritage New Zealand Pouhere Taonga (HNZPT).

An archaeological site is defined in the Heritage New Zealand Pouhere Taonga Act as:

- (a) any place in New Zealand, including any building or structure (or part of a building or structure), that—
 - (i) was associated with human activity that occurred before 1900 or is the site of the wreck of any vessel where the wreck occurred before 1900; and
 - (ii) provides or may provide, through investigation by archaeological methods, evidence relating to the history of New Zealand; and
- (b) includes a site for which a declaration is made under section 43(1).

The Resource Management Act 1991 (RMA) requires City, District and Regional Councils to manage the use, development, and protection of natural and physical resources in a way that provides for the wellbeing of today's communities while safeguarding the options of future generations. The protection of historic heritage from inappropriate subdivision, use, and development is identified as a matter of national importance (Section 6f).

Historic heritage is defined as those natural and physical resources that contribute to an understanding and appreciation of New Zealand's history and cultures, derived from archaeological, architectural, cultural, historic, scientific, or technological qualities.

Historic heritage includes:

- historic sites, structures, places, and areas
- archaeological sites;
- sites of significance to Maori, including wahi tapu;
- surroundings associated with the natural and physical resources (RMA Section 2).

These categories are not mutually exclusive and some archaeological sites may include above ground structures or may also be places that are of significance to Maori.

Where resource consent is required for any activity the assessment of effects is required to address cultural and historic heritage matters.

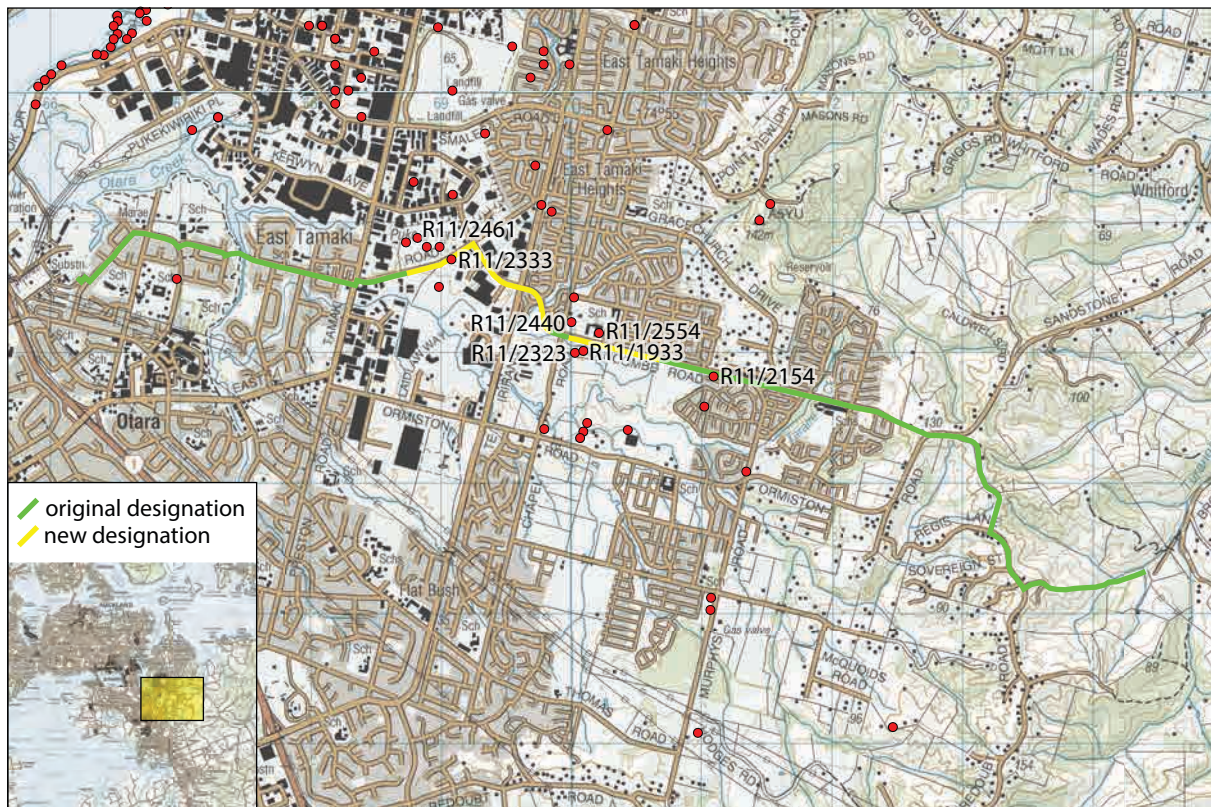


Figure 1. Location of the original and new designations and surrounding archaeological sites.

2 Methodology

The following digital data sources were consulted:

- Site records from the New Zealand Archaeological Association (NZAA) Site Recording Scheme (SRS) were obtained from ArchSite (<https://nzarchaeology.org/archsite>).
- Records of previous archaeological investigations in the scope of works and in the wider vicinity were obtained from the HNZPT digital library (<https://dl.heritage.org.nz/greenstone3/library/collection/pdf-reports/>).
- Historic maps and plans held by Land Information New Zealand (LINZ) were accessed using QuickMap.
- Aerial Photographs held by Land Information New Zealand (LINZ) and Retrolens were searched (<https://data.linz.govt.nz>; <https://retrolens.co.nz>).
- The Geomap function of the Auckland Council website provided information on significant Historic Heritage Places and Extents (<https://geomapspublic.aucklandcouncil.govt.nz>).
- The HNZPT New Zealand Heritage List / Rārangī Kōrero was accessed for information on listed heritage sites.
- Transpower's Asset Map server was accessed for structure locations.

New designation areas were surveyed 28 June 2023 by Leela Moses of CFG Heritage. This was a visual survey of the new entire designation conducted on foot. No intrusive methods such as probing or test pitting were employed.

Data from these various sources was incorporated into the project GIS.

3 Background

3.1 Ōtara

Oral traditions suggest that Ōtara was first settled by people arriving on the Tainui waka. Accounts differ upon how the suburb received its name. In one of these 'O Te Tara' refers to the Ngāi Tai chief Tara Te Irirangi, and in another Tara is a mythical figure who pricked his hand on a fish spine after being caught in his brother's fishing net (Clarke 2002). Māori settlers were drawn to the area by the fertile gardening soils surrounding the volcanic scoria cones of Matanginui and Te Puke o Tara / Ōtara / Smales Mountain (R11/36), approximately 400 m from the new designation, tuff craters of Styaks Swamp and Pukewairiki, and abundant marine and terrestrial resources of the Tamaki River and Ōtara Creek (Clarke 2002; Simons 1993).

A significant portage, known as the Waiokauri / Pukaki Portage, sits around 1.5 km south of the project area. The portage ran south west from the end of the Tamaki River known as Curlew Creek, to the end of the Waokauri Creek (Hooker 1997). Around 2 km north of the project is the Ōtāhuhu portage, it was the most used in the immediate Auckland area because of its central position, length, and easy gradient (Hooker 1997). The portage is under 1 km long, and the shortest portage between the east and west coasts of New Zealand. It was one of the main links in the communication network between the northern and central districts of the North Island.

Early European settlement was focussed on utilising fertile gardening soils and easy access by waterways and coastlines. By the 1850s European settlers were moving into the area to hunt, and to take up section allotments of 100 acres for the purpose of the cultivation of crops such as wheat, oats, barley, corn and potatoes alongside raising stock (Simons 1993). These sections were initially part of the large Fairburn Purchase of 1836 by Rev. William Fairburn of the Church Missionary Society, which was disallowed under the Land Claims Commission in 1848 and purchased again by the crown in 1854 under the Wairoa Purchase (Campbell 2013; Clarke 2002).

A large farm covering a portion of the original designation was established in 1851 by William Goodfellow of Ōtara Farm (Clarke 2002; Simons 1993). The farm and homestead (R11/3227) are plotted on survey plan DP 6831 (drawn 1907), which also shows an 'undefined hedge' on either side of Alexander Crescent / Franklyne Road (Figure 2).

3.2 East Tāmaki / Flat Bush

Inland the project area cuts through East Tāmaki and Flat Bush, which, prior to European arrival, were covered in bracken fern, mānuka and flax (La Roche 1991: 162). These areas are fed by tributaries of the Tāmaki River, whose channels served as useful transport and food gathering locations for pre-European Māori. Flat Bush has only relatively recently become a built up part of Auckland City, and historic overviews of Auckland and Manukau tend to concentrate on the harbours and areas of early settlement (Campbell 2013). Consequently, little information has been found about the early settlement of Flat Bush specifically, although some more general information about the early European history of East Tāmaki is available (Clarke 2002).

These areas were also part of the 1836 'Fairburn Purchase', and for much of the early European period were agricultural areas. A lack of roading was an early obstacle to settlement and development, until the establishment of the East Tāmaki Highway Board in 1875 (Clarke 2002: 12). What is now called Stancombe cottage (or Baverstock cottage) (R11/2554) was built in 1877 on land owned by James Burt. Burt sold the land in 1883 and it changed hands twice before being bought by John Edmonds Stancombe in November 1885, for £22 10s. Stancombe family are recorded as having an orchard, as well as pasture (Hudson 2012: 2).

The East Tāmaki Road section of the new designation cuts through the 413 acre Smales Farm, purchased in 1852 by retired Wesleyan minister Gideon Smales (Farley and Clough 2014). The farm originally produced wheat, oats and barley, though it later switched to dairy. Drystone walls were constructed both on the estate boundaries and internally (Clarke 2002: 114). Smales also constructed St Johns Church on the estate in 1860 using basalt quarried from the property. The farm is shown on

DP 615 (drawn in the 1880s), which also shows stone walls lining the road (Figure 3). The church and many of the drystone walls remain in place, directly abutting the East Tāmaki Road portion of the new designation.

3.3 Archaeological background

Previous assessments have been undertaken to assess the effects of the original designation (Druskovich 2007; Druskovich 2005). These reports noted that the original designation was in the immediate vicinity of 2 archaeological sites, R11/2333 (drystone wall) and R11/2384 (fencepost). While the change in designation has moved the project away from the known extents of R11/2384, R11/2333 remains along the designation boundary. The location of the Brownhill substation was surveyed, and no archaeological sites were identified (Druskovich 2005).

3.3.1 Ōtara

The original site of Goodfellow's Homestead, recorded as archaeological site R11/3227, is approximately 250 m from the Ōtara portion of the original designation. The site was recorded based on historic sources and has not been visited by an archaeologist.

Tāmaki River is 1.2 km from the proposed works and was surveyed by Rod Clough and Don Prince in 1996 as part of preparation works for a proposed subdivision (Clough and Prince 1996). While they did not detect any evidence of archaeological sites, they did find scattering of tuangi shell (*Austrovenus stutchburyi*) which was archaeological. Portions of the project area could not be surveyed because of modern debris over the property made it inaccessible. Based on the aerial pho-

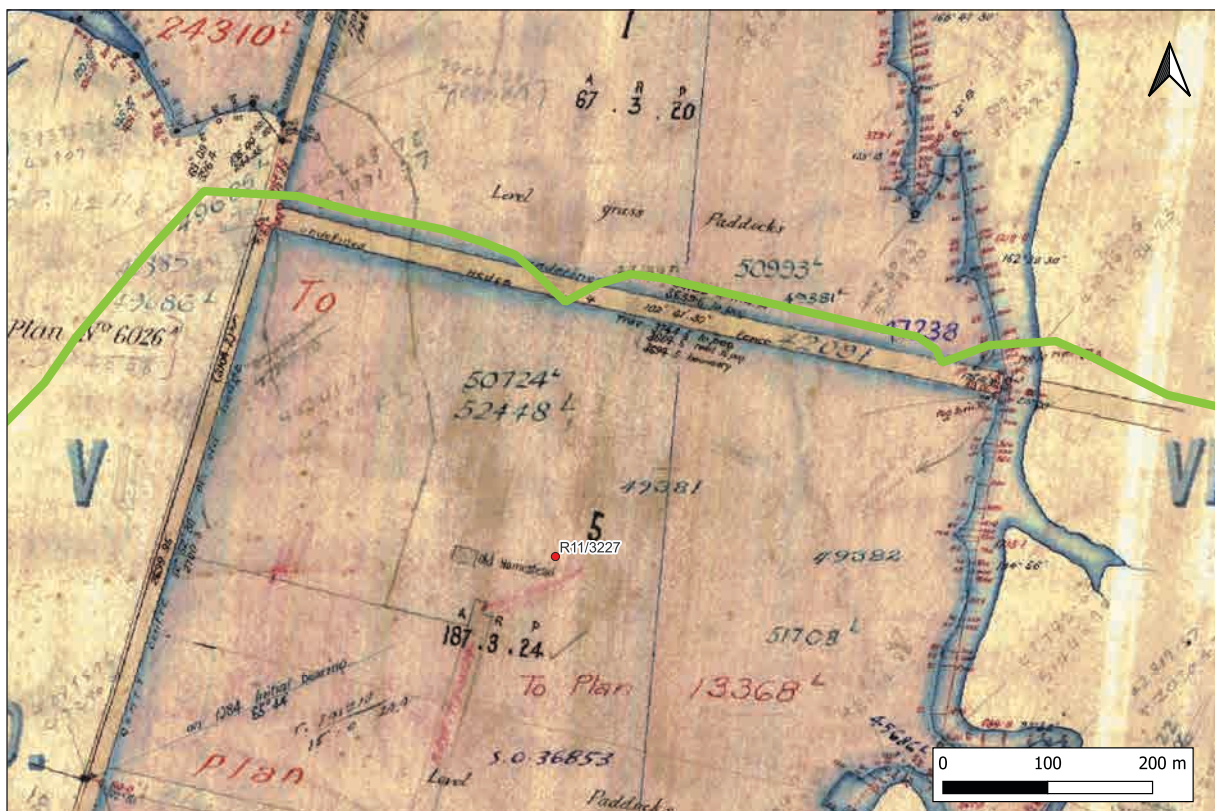


Figure 2. Detail of DP 6831 showing historic homestead (R11/3227), and 'undefined hedge' on the side of the Alexander Crescent / Franklyne Road designation.

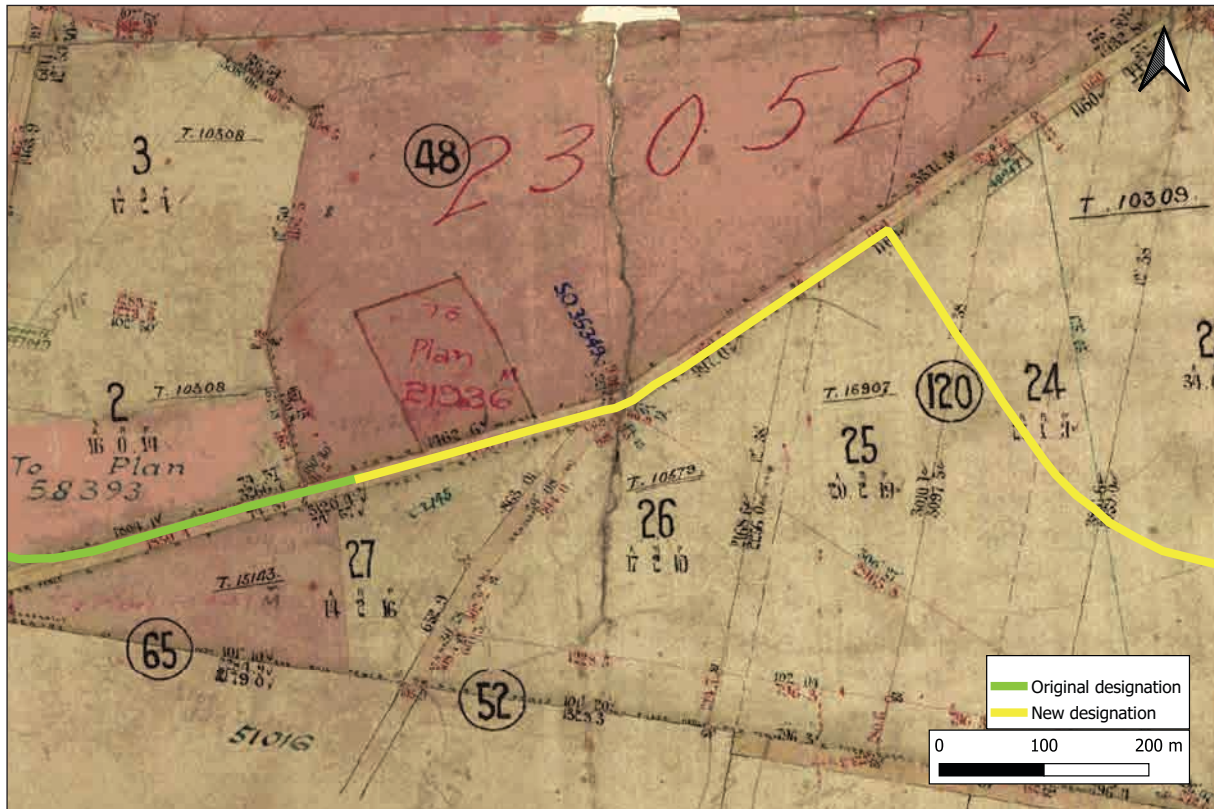


Figure 3. Detail of DP 615 showing Smales Farm, with drystone walls bordering the East Tāmaki Road designation.

tographs taken between 1959 and 2017 the subdivision did not go ahead. The aerial photographs also indicate portions of the ground have been modified by the Tip Top factory.

There are results from archaeological investigations on the banks of the Tāmaki River indicating that humans were in the area in the 16th and 17th centuries AD (Foster and Sewell 1993). This date range is essentially similar to dates for the surrounding Hamlin's Hill, Westfield, Fisher Road, and Hawkin's Hill archaeological sites as well as the Ōtāhuhu Pā (Foster and Sewell 1993).

A number of archaeological assessments have taken place in recent years for infrastructure projects in and around Ōtara (Trilford 2019; Trilford 2022; Ussher 2019; Ussher and Trilford 2019).

3.3.2 East Tāmaki / Flatbush

A number of archaeological surveys have been conducted in the volcanic zones of East Tāmaki to the north, and Flat Bush southeast. The Stevenson Block (Rickard 1985), Shaw Block (Slocombe and Veart 1989), Allens Road Block, Cryers Road Block (Veart 1985), Harris Road East Block (Douglas 1987), Harris Road West Block (Foster and Veart 1986), and Te Wharau Blocks (Slocombe 1986) in East Tāmaki were surveyed between 1983-89 by Department of Conservation Archaeologists. These surveys resulted in 13 excavations to further investigate the nature of this large Pre-European archaeological landscape that stretched from Matanginui/Green Mountain (R11/24) to the sea. It was argued that both diverse gardening areas and habitation sites were present in the 400 acre lava field of Matanginui and Te Puke o Tara/Smales Mountain (R11/36). These included an area of stone mounds and walls (R11/1301); settlement and garden areas (R11/1497, R11/1518); terraces, middens and stonework (R11/1388, 1389, 1392, 1516, 1517); stonework and midden (R11/1519); midden, terraces, stonework and mounds (R11/1525); and midden and stonework (R11/1591, 1590).

In 1997 Clough and Prince outlined the then current knowledge of heritage places in East Tāmaki, concluding that only 10–20% had been systematically surveyed. They noted that most pre-European Māori sites were coastal and so outside their study area. The use of the area for small, short term camps and for transit between places was the predominant pattern. An overview of the archaeology of Flat Bush (Baquié 2010) noted that archaeological recording throughout the area was “low key”, and proposed that the most likely places to find pre-European Māori archaeological evidence was:

- areas along the banks of creeks and streams (green corridors);
- knolls, and towards the ends of spurs dropping between streams;
- some of the more elevated areas in the south and east.

The area would have been exploited for its natural resources from swamps, streams and forest, and would have been traversed by people moving between favoured locales. Some small-scale encampments may be present, but archaeological evidence of these activities is likely to be ephemeral. Some sites relating to European settlement in the mid-19th century are recorded, and it might be expected that more such sites could be recorded if the area were comprehensively researched (Campbell 2012: 5).

The East Tāmaki Road portion of the new designation runs between a number of archaeological sites. R11/2333, R11/1524 and R11/2461 are all related to the occupation of Smales Farm, now Hampton Park, St Johns Church (also scheduled in the AUP ID 1343, Historic Heritage Schedule Category A*) and Te Puke o Tara Sports park. During the construction of Te Puke o Tara sports park a section of the farm’s drystone wall (R11/2333) was removed. Archaeological investigations undertaken during these works found few artefacts (Farley and Clough 2014).

Hampton Park was assessed in 2001, at which time several archaeological features were identified, including drystone walls along the edge of the designation (R11/2461). The assessment notes that the drystone walls are an integral part of the parks history, and recommended that they be restored and maintained (Clough et al. 2008: 34). Pre-European Māori sites related to the occupation of nearby Te Puke o Tara were also assessed, including R11/1616 (midden), R11/2460 (pit and terrace site) (Clough 2001; Clough 2007; Clough et al. 2008).

There are 5 archaeological sites within 100 m of the Stancombe Road designation. Two sites are recorded inside Barry Curtis Park, to the south of the designation. Midden R11/2323 was discovered during earthworks associated with the construction of the park, but could not be identified during later investigations (Felgate 2005). Urupā R11/1933 was identified during a survey by Clough and Prince in 1997, who stated that the likelihood of further archaeological evidence related to the sites being present was low (Clough and Prince 1997). Directly across the road from this park is the former site of the Stancombe cottage (R11/2554) and church cemetery (R11/2440). Archaeological investigations were undertaken during the removal of this cottage in 2012. The cottage was found to have been constructed in stages, and several ceramic and glass artefacts were recorded (Hudson 2012). To the east on Stancombe Road, is hedge and ditch site R11/2154, recorded on the basis of historic plans and the surface evidence of this is no longer present.

4 Field survey

The field survey includes the new designation only, as the original designation has previously been surveyed and assessed.

4.1 East Tāmaki Road

The section of the new designation which runs through East Tāmaki Road cuts through the historic Smales Farm, which is now the historic St John’s Church and Hampton Park to the north, and Te Puke o Tara sports park to the south. R11/2333 was destroyed during the construction of the sports park, and no evidence of archaeological material was evident on the south side of East Tāmaki Road. On the north side, drystone walls associated with Smales Farm (R11/2461) are present across large portions of the road. These walls are in varying condition - sections at 322 East Tāmaki Road having



Figure 4. View east along East Tāmaki Drive, showing drystone walls on the left.



Figure 5. West facing view of drystone walls, showing internal structure.

largely collapsed, leaving only the base. Directly in front of St Johns Church 282 East Tāmaki Road the wall is in better condition and appears largely intact. No other evidence of archaeological material was identified along the Stancombe Road portion of the new designation.

4.2 Accent Drive

Accent Drive is lined with businesses and wide footpaths. To the east it crosses a drainage reserve, though still separated from the road by large footpaths. No evidence of archaeological material was identified along the Accent Drive portion of the new designation.

4.3 Stancombe Road

The Stancombe Road section of the new designation is largely subdivided for dwellings to the north, and Barry Curtis Park to the south. The park is extensively landscaped, with large carparks, playgrounds and walking paths. At the eastern edge of the Stancombe Road, along the front of a drainage reserve, is recorded gorse hedge, R11/2154. This could not be identified during the field survey and is presumed destroyed. No other evidence of archaeological material was identified along the Stancombe Road portion of the new designation.



Figure 6. Stancombe Road looking west, with the site of R11/2154 (gorse hedge) in the left foreground.

5 Assessment

The following assessments of values and significance relate only to archaeological values. Other interested parties, in particular mana whenua, may hold different values regarding the sites.

No previously recorded archaeological sites will be impacted by the proposed works, however the designation does run in close proximity to a number of sites.

The East Tāmaki Road portion of the designation runs directly alongside archaeological sites R11/2333 (drystone wall) and R11/2461 (Hampton Park). R11/2333 was investigated in 2013 during its removal, and is now recorded as destroyed. R11/2461 Hampton Park includes a number of drystone walls around and through the park, including walls running directly alongside the designation. Hampton Park and St John's Church are also listed in the AUP (ID 1343, Historic Heritage Schedule Category A*) -the proposed works fall outside their scheduled extent.

The Stancombe Road portion of the designation has a number of archaeological sites in the immediate vicinity. R11/1933 (urupā) and R11/2323 (midden) are inside Barry Curtis Park to the south of the project. R11/2323 was likely destroyed during construction of the park. R11/2554 (site of Stancombe Cottage) and R11/2440 (church cemetery) are to the north of the project. R11/2154 (gorse hedge and ditch) could not be identified during the survey and appears to have been destroyed.

There is potential for previously unrecorded deposits related to both Smales Farm, and pre-European Māori occupation to be present along East Tāmaki Road.

5.1 Assessment of values: potential midden and oven sites

The following assessment of archaeological values is based on the criteria set out in the HNZPT (2019).

Condition	The overall condition of any midden/ovens sites is not known.
Rarity	Midden/oven sites are a common site type both regionally and nationally.
Context	Any archaeological features exposed would have high contextual values, as they would relate to pre-European Māori land use and the wider archaeological context in the area and can be used as an indicator of where larger scale archaeological landscapes may exist.
Information	Should sites be identified during works, there will be potential for scientific information related to pre-European Māori land use to be recovered. Specifically, midden can provide information about the subsistence, resource use, dietary patterns and residential patterns of pre-European Māori populations. If charcoal or other datable material is found within a secure context, it could provide temporal information about the use of the features.
Amenity	No amenity values are known. Any potential archaeological information could be presented to the public using interpretive materials.
Cultural	Cultural values can only be assessed by mana whenua.

5.2 Assessment of values: potential historic agricultural and pastoral sites

The following assessment of archaeological values is based on the criteria set out in the HNZPT (2019).

Condition	The overall condition of any agricultural and pastoral sites is not known.
Rarity	historic agricultural and pastoral sites are a common site type both regionally and nationally.
Context	Any archaeological features exposed would have high contextual values, as they would relate to Smales Farm, St John's Church, and the wider archaeological context in the area.
Information	Should sites be identified during works, there will be potential for scientific information related to European settlement and land-use to be recovered.

Amenity	No amenity values are known. Any potential archaeological information could be presented to the public using interpretive materials.
Cultural	Cultural values can only be assessed by mana whenua.

5.3 *Assessment of effects*

A full plan of works is not available at this time. However, all works will take place inside the road reserve.

5.3.1 Ōtara substation to East Tāmaki Road

No previously recorded sites will be impacted by the proposed works. There is no reasonable cause to suspect previously unrecorded archaeological sites will be impacted by these works.

5.3.2 East Tāmaki Road

East Tāmaki Road runs through the historic Smales Farm (Hampton Park). Although drystone walls associated with the farm to the south of the road were destroyed (R11/2333), other walls remain intact on the northern side of the road. While the walls will not be negatively impacted, potential previously unrecorded archaeological deposits related to the occupation of the farm (R11/2461) may be present underneath the road in the road reserve, and these could be negatively impacted by the proposed works by their removal during earthworks.

Inside the Hampton Park property are several archaeological features related to the pre-European Māori occupation of the area, including pit and terrace site R11/2460 and midden R11/1616. These sites will not be directly impacted by the works, but their presence suggests the potential for previously unrecorded archaeological sites in the area. These could be negatively impacted by the proposed works.

5.3.3 Accent Drive

No previously recorded sites will be impacted by the proposed works. There is no reasonable cause to suspect previously unrecorded archaeological sites will be impacted by these works.

5.3.4 Stancombe Road

No previously recorded sites will be impacted by the proposed works. Although there are a number of sites in close proximity to the Stancombe Road portion of the designation, these have largely been destroyed by previous works. There is no reasonable cause to suspect previously unrecorded archaeological sites will be impacted by these works.

5.3.5 Jeffs Road to Brownhill substation

No previously recorded sites will be impacted by the proposed works. Brownhill substation was previously surveyed for the original designation and no evidence of archaeological sites were identified. There is no reasonable cause to suspect previously unrecorded archaeological sites will be impacted by these works.

5.4 *Designation conditions*

The existing designation condition (9) states:

Before any construction works are carried out associated with the Upper North Island Upgrade Project, Transpower shall make any minor adjust-

ments to the location of the cable trench within the corridor to ensure that the sites R11/2333 and R11/2384 are not damaged by construction of the cable trench. Advice note: This condition is subject to any conditions of any archaeological authority granted under the Historic Places Act 1993.

Overall the change to the designation creates no more than minor changes to the effects of the project on potential previously unrecorded archaeological deposits. It is recommended that conditions should be updated to reflect HNZPTA 2014:

Prior to works commencing, an HNZPT archaeological authority should be applied for to undertake works on East Tāmaki Road. The remainder of the works should take place under Transpower’s accidental discovery protocol.

6 Recommendations

These recommendations are only made on the basis of the archaeological values that have been outlined above. Any other values associated with special interest groups, including tāngata whenua, can only be determined by them. It is recommended that:

- Where sites are suspected of extending into the works area, further research should be undertaken;
- A full assessment of effects should be undertaken when the earthworks plan is known as part of possible future HNZPT applications;
- Where feasible, an archaeologist should guide ground disturbance plans to help the avoid potential subsurface extents of recorded sites;
- since archaeological research cannot always detect sites of traditional significance to Māori, or wāhi tapu, the appropriate tāngata whenua authorities should be consulted regarding the possible existence of such sites, and the recommendations in this report.

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Appendix 4

Traffic Assessment



Brownhill to Otahuhu - Proposed Alteration to Designation: Traffic Assessment

Prepared for
Transpower New Zealand Limited

Prepared by
Tonkin & Taylor Ltd

Date
August 2024

Job Number
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Document control

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April 2023	1	Draft report for client review	Andrew Carline	James Dyer	Shannon Richardson
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October 2023	2.3	Timeline removed	Andrew Carline	Tom Bassett	Shannon Richardson
August 2024	3.0	V01 - Revised designation alignment	Andrew Carline	Tom Bassett	Shannon Richardson

Distribution:

Transpower New Zealand Limited

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Executive summary

The proposed works involve the installation of a 220 kV underground double circuit consisting of cables with associated joints, link pits and ancillary equipment. The designation is required to provide for the installation, operation, and maintenance of the proposed underground cable and to provide for an efficient and secure electricity transmission connection to overhead transmission circuits from the existing urban boundary of Auckland to substation facilities.

The proposed alterations to the designation are a consequence of the development that has taken place in the Flat Bush and Mission Heights areas since the original designation was confirmed. This includes a new school (Mission Heights Primary and Junior College) as well as several new roads and residential subdivisions which have allowed alternative access routes to be considered. The proposed alterations to the designation are better aligned with what are now existing road corridors, and minimise the use of stormwater treatment areas, green space and undeveloped land, making the cable infrastructure easier to access and maintain.

The route of the proposed designation initially follows the path of the existing designation, but now travels along road corridors that have been constructed since the original designation was confirmed. Although there has been considerable new development along the route since the original designation was confirmed, the developments have been of a broadly similar nature to what was in place at that time (i.e. light industrial, residential and some informal recreation spaces).

The transport effects on the new sections of the proposed route will therefore be of a similar nature as those in the original Notice of Requirement (NoR) for the existing designation and require similar mitigation measures to address potential transport related effects (community liaison, construction scheduling, route diversions and temporary traffic controls). As per Condition 18 of the NoR (refer Appendix C), all works will be undertaken in accordance with the National Code of Practice for Utility Operators' Access to Transport Corridors under the Utilities Access Act 2010.

1 Project overview

In 2007, a designation was confirmed for the Transpower 220 kV underground cable from the proposed Brownhill Substation/Transition Station to the Otahuhu Substation as part of the North Island Grid Upgrade Project (Designation ref: 8517; 143 Brownhill Road, Whitford to 26-28 Kaitawa Street, Otara).

Since the designation was confirmed in the Auckland Unitary Plan (AUP), the wider area around the original route has been developed. Accordingly, Transpower is seeking an alteration to the designation to realign the transmission line corridor within the road reserve wherever possible.

The conditions from the original NoR (refer Appendix C) are expected to remain largely unchanged.

2 Scope and limitations of this report

As part of the reporting to support the alteration to designation, Transpower has requested Tonkin & Taylor Ltd (T+T) provide technical assessment on any potential traffic-related implications that may arise from the change in designation route, particularly for construction-based activities.

This report focuses on those areas of the existing AUP designation which are proposed to be altered (which have been highlighted in yellow in the figures below). The areas from the original designation which remain unchanged have been shown highlighted as green, and areas of existing designation to be removed have been highlighted in red. Unchanged areas of the original designation have not been re-analysed for changes in traffic volume or changes in development environment that may have taken place since the original designation was issued.

This report should be read in conjunction with the original NOR document "*Transpower New Zealand Ltd. North Island Grid Upgrade Project; Notices of Requirement Documentation; Part X; Section 17: Traffic and Transport Effects*" - MWH, April 2007- (refer Appendix B).

The report only considers the impact on traffic flows, transport services and property access for the areas affected by the actual trenching works and does not cover detailed construction methodology, detailed temporary traffic management, plant and materials storage or other potential impacts such as overland stormwater flows or underground infrastructure.

3 Route Analysis

This section describes the proposed alterations to the existing AUP designation (ref: 8517), and potential traffic and transport effects due to construction activities, moving from north to south.

Construction methodology shall be as per the original NoR document *Transpower New Zealand Ltd; North Island Grid Upgrade Project; Notices of Requirement Documentation, Part X, Section 17: Traffic and Transport Effects* (MWH, 2007) unless otherwise specified. All works shall comply with the National Code of Practice for Utility Operators' Access to Transport Corridors under the Utilities Access Act 2010 as per the proposed amended Condition 18 of the NoR.

The proposed route alterations are shown on the plans in each section below and are as follows:

3.1 East Tamaki Rd from no. 322 to Accent Dr (~590 m)

3.1.1 Description

East Tamaki Road, leading eastwards from number 322, is a 2-lane, 2-way regional arterial route which is between 9.5 and 11 m wide (refer 3.1). It is of an undeveloped semi-rural nature for much of its length (despite being surrounded by an industrial area), with wide grassed berms and no kerb and channel until around 100 m from the intersection with Accent Drive. At this point the carriageway widens to over 14 m between kerb faces. The road reserve is of the order of 22 metres wide.



Figure 3.1: East Tamaki Road (image courtesy Transpower).

3.1.2 Assessment of effects

3.1.2.1 Through traffic

East Tamaki Road has a posted speed of 60 km/h and carries moderate flows (~5500 VPD) of mainly through-traffic. During active construction periods the works will require 6 m width - thus there will be between 3.5 and 5 m of carriageway available for vehicles to pass. This is insufficient for two lane running without mitigation measures.

3.1.2.2 Bus services

There are no scheduled bus services on this section of East Tamaki Road.

3.1.2.3 Property access

There are several accesses to industrial and commercial properties along East Tamaki Road, which in addition to access for light vehicles will require continuous unbroken access for heavy commercial vehicles. Access to the church in East Tamaki Road will need to be available as required by the church. There is a single residential property access on this section, which will need to be maintained unless by prior arrangement with the occupier.

3.1.2.4 Parking

There is currently informal roadside parking on both sides of the road, generally on the shoulder and onto the berms. Parking will be prohibited within the works zone and within 100 m either side to maintain lane width and safety.

3.1.3 Mitigation measures

3.1.3.1 General

Effects on through traffic can generally be managed through implementing the following measures:

- Local detours via adjacent roads to facilitate diversionary routes whilst some intersections are temporarily closed during active construction periods.
- Information boards providing advanced notification of the works start date and expected duration.
- Plating over the trench to facilitate access during passive construction periods.
- At all times during construction the contractor will be required to comply with the guidelines regarding traffic safety and safe management on the road in accordance with the Code of Practice for Temporary Traffic Management (COPTTM).

3.1.3.2 Through traffic

The current road width will not easily facilitate two-way working without the need for temporary traffic signals, stop/go controls or localised temporary widening to accommodate traffic flows.

A temporary diversionary route for through traffic will not always be necessary but will be available via Lady Ruby Drive and Springs Road for any works that require single lane running.

Plating over the trench will facilitate access during passive construction periods.

3.1.3.3 Bus services

There are no scheduled bus services that use this road; however, some drivers may use it as access or egress route to/from the depot by Accent Drive. Alternative routes (e.g., via Lady Ruby Drive and Springs Road) may therefore need to be recommended to the bus operator.

3.1.3.4 Property access

Effects on local residents due to a road closure can be alleviated through information signage and mail drops clearly identifying diversion routes.

3.1.3.4.1 General

- Work will be scheduled during active construction periods to minimise disruption.
- Liaison will be undertaken with local businesses to minimise the effects on disrupted access.
- Plating over trenches will facilitate access during passive construction periods.
- At all times during construction the contractor will be expected to comply with the guidelines regarding traffic safety and safe management on the road in accordance with COPTTM.

3.1.3.4.2 Industrial and commercial accesses

Where it is necessary to undertake active works across industrial and commercial accesses, work will be carried out during weekends only or, depending on the operational nature of individual businesses, at night times (night-time disturbance is more acceptable in non-residential areas such as this). It will be of utmost importance to engage with all stakeholders in this area to establish the hours and nature of their operations.

3.1.3.4.3 Emergency services

By planning and co-ordinating the works in this vicinity with the emergency services (FENZ) it will be possible to ensure that access for emergency services will be maintained or an agreed diversionary route (e.g., via Lady Ruby Drive and Springs Road) available as required.

3.1.3.4.4 Church access

In the case of access to the church, working arrangements will need to suit their access requirements for this entrance.

3.2 Accent Drive from East Tamaki Road to Te Irirangi Drive (~500 m)

3.2.1 Description

Accent Drive from East Tamaki Road to Te Irirangi Drive is a 2-lane, 2-way arterial route with a flush median (refer Figure 3.2). This section of the road serves a light industrial area with three connecting cul-de-sac roads that service industrial properties. The road is fitted with kerb and channel with footpaths and grass berms both sides and has a carriage way width of approximately 12 m between kerb faces. The intersections at each end of this section widen to over 25 m between kerb faces at the throats. The road reserve is of the order of 26 metres wide. The intersections at each end of this section are fitted with a left turn slip lane.

3.2.2 Assessment of effects

3.2.2.1 Through traffic

This section of Accent Drive has a posted speed of 60 km/h and carries significant flows (~9100 VPD) which is a combination of through-traffic and vehicles servicing the adjacent industrial premises.

During active construction periods the works will require 6 m width - thus there will be between 5.5 and 10 m of carriageway available for vehicles to pass. This is sufficient to facilitate two-way running without the need for temporary traffic signals, stop/go controls or localised temporary widening to accommodate traffic flows. Plating over the trench will facilitate access during passive construction periods.



Figure 3.2: Accent Drive to Te-Irirangi Drive (image courtesy Transpower).

3.2.2.2 Bus services

Accent Drive is served by the 352 bus which is a weekday, peak-period only service. This section contains one bus stop on each side of the road.

3.2.2.3 Property access

Accent Drive contains three no-exit access roads (Kordel Place, Reg Savory Place and Beale Place) which serve several adjacent industrial properties. In addition, there are a number of direct accessways off the road, which serve other adjacent industrial sites.

3.2.2.4 Parking

There is currently non-formalised roadside parking on one or both sides of the road. Parking will be prohibited within the works zone and within 100 m either side to maintain lane width and safety.

3.2.3 Mitigation measures

3.2.3.1 General

Effects on through traffic can generally be managed through implementing the following measures:

- Local detours via adjacent roads to facilitate diversionary routes whilst some intersections are temporarily closed during active construction periods.
- Information boards providing advanced notification of the works start date and expected duration.
- Plating over the trench to facilitate access during passive construction periods.
- At all times during construction the contractor will be required to comply with the guidelines regarding traffic safety and safe management on the road in accordance with the Code of Practice for Temporary Traffic Management (COPTTM).

3.2.3.2 Through traffic

The current road width will be able to facilitate two-way working without the need for temporary traffic signals, stop/go controls or localised temporary widening to accommodate traffic flows. However, because delays can be expected due to reduced temporary speed limits, a temporary diversionary route for through traffic will be available via Chapel Road, Ormiston Road and East Tamaki Road (this will require adequate signage in order to perform effectively).

Plating over the trench will facilitate access during passive construction periods.

3.2.3.3 Bus services

Effects on bus services can generally be managed through implementing the following measures:

- Plating over the trench to facilitate access during passive construction periods to accommodate traffic including the bus route.
- Temporary relocation of affected bus stops during the construction period. This will be undertaken in conjunction with the bus operator.
- The peak-period only operation of the 352 service will enable work to be scheduled to have minimal impact on this service.
- A communications plan for bus patrons developed with the bus operator.

3.2.3.4 Property access

Due to the industrial nature of the properties in this section of road, it will be essential to liaise with these stakeholders to coordinate the best times to undertake works that may impact access to these premises. Being industrial in nature it will be easier to accommodate night works or weekend works to minimise disruption to the businesses.

3.2.3.5 Parking

There should be sufficient parking on adjacent streets and private car park areas for the works to have minimal impact. It will, however, be essential to liaise with the stakeholders on this route and the users of roadside parking to establish staff travel and parking patterns in order to understand the best mitigations for any temporary parking losses.

3.2.3.6 Emergency services

By planning and co-ordinating the works in this vicinity with the emergency services (FENZ) it will be possible to ensure that satisfactory access for emergency services will be maintained.

3.3 Crossing Te Irirangi Drive (~35 m)

Te Irirangi Drive is a very busy regional arterial road with an ADT of approximately 31,700 VPD. It consists of two lanes in each direction with a wide raised central median. The width of the carriageway at the intersection is approximately 35 m. Te Irirangi Drive has a posted speed of 80 km/h in both directions. The intersection with Accent Drive is signalised, with left turn slip lanes in all directions. Two southbound lanes from Te Irirangi Drive are dedicated to right turn into Accent Drive westbound, indicating that a considerable volume of traffic into Accent Drive comes from this direction.

3.3.1 Assessment of effects

3.3.1.1 Through traffic along Te Irirangi Drive

Disruption due to construction activities at this location could lead to significant congestion, not just through lane closures but also with temporary speed limits that will be required. This could result in extensive queuing along the length of the road both in a northbound and southbound direction. Due to the highway-like nature of Te Irirangi Drive, there are a limited number of intersections along the route, meaning that potential diversion options are around 1 km away in either direction.

Because Te Irirangi Drive is busy most days and weeks of the year, work at this location should be undertaken in off-peak periods only (including night works). Communication with the public via sign boards and social media will be essential to minimise disruptions.

3.3.1.2 Bus services

The 352 route makes a left turn from Te Irirangi Drive onto Accent Drive. There are no other scheduled buses that pass through this intersection. This is a weekday peak-period service only.

3.3.2 Mitigation measures

3.3.2.1 General

The limited access points onto Te Irirangi Drive between Ormiston Road, Accent Drive and Smales Road means that it should be easier to manage traffic volumes along Te Irirangi Drive by encouraging route diversions at Ormiston Road Smales Road and the residential feeder roads to the east. Signage for these would be provided from all directions, signed prior to Smales Road and Ormiston Road to provide drivers with the ability to change their route early in order to avoid the intersection. In addition, residential properties to the east of Te Irirangi Drive will require a mail drop explaining the works and suggesting possible alternative routes.

Although the work can be undertaken in several distinct stages, it is expected that it will take longer than the period between weekday peak hours and therefore it is expected that work will likely be scheduled for weekends and/or potential night working.

Regarding construction methodology across the intersection, one cable circuit will be trenched and plated across the carriageway. Plates will be installed over excavated trenches for traffic to over run until the trenches can be temporarily reinstated. Final reinstatement and finished seal and marking will be required at a later date.

This work is likely to be undertaken over several weekend periods for each carriageway. In turn, both the three lane carriageways will be reduced to a single lane as the plating is installed and then the lane closures will be shifted to continue working across the carriageway until each is complete.

At all times during construction the contractor will be expected to comply with the guidelines regarding traffic safety and safe management on the road in accordance with COPTTM.

3.3.2.2 Bus services

The peak-period only operation of the 352 service will enable work to be scheduled to have minimal impact on this service. However, additional time may be required to be scheduled into the timetable due to reduced temporary speed limits – this will need to be undertaken in conjunction with the bus operator and a communications plan developed for bus patrons.

3.3.2.3 Emergency services

By planning and co-ordinating the works in this vicinity with the emergency services (FENZ) it will be possible to ensure that access for emergency services will be maintained.

3.4 Accent Drive from Te Irirangi Drive to Chapel Rd (~520 m)

3.4.1 Description

Accent Drive from Te Irirangi Drive to Chapel Road is a 4-lane, 2-way arterial route with a flush median (refer Figure 3.3). This section of the road serves a residential area and recreation reserves along its length. The road is fitted with kerb and channel with footpaths and grass berms both sides and has a carriageway width of approximately 15 m between kerb faces. There is a combination of yellow “No Stopping At All Times” (NSAAT) marking on both sides with some sections that have direct access for residential properties reducing to single lane with designated shoulder parking. A dozen or so properties have direct access onto the road, with a large number being accessed by three local roads, Wayne Francis Drive, Siedeberg Drive and Savona Drive.

The intersections at each end of this section widen to over 25 m between kerb faces at the throats. The road reserve is of the order of 27 metres wide. The intersections at each end of this section are fitted with a left turn slip lane.



Figure 3.3: Accent Drive from Te Irirangi Drive to Stancombe Road (image courtesy Transpower).

3.4.2 Assessment of effects

3.4.2.1 Through traffic

This section of Accent Drive has a posted speed of 60 km/h and carries significant flows (~12,300 VPD) which is a combination of through-traffic and vehicles accessing residential properties.

During active construction periods the works will require 6 m width – thus there will be approximately 10 m of carriageway available for vehicles to pass. This is sufficient to facilitate two-way running without the need for temporary traffic signals, stop/go controls or localised temporary widening to accommodate traffic flows.

Plating over the trench will facilitate access during passive construction periods.

3.4.2.2 Bus services

There is no scheduled bus service on this section of road.

3.4.2.3 Property access

All of the residential properties with direct access to Accent Drive are located on the north/east side of the road. There are a significant number of properties that are accessed via the local roads, all of which have alternative entry points either onto Te Irirangi Road or Chapel Road.

3.4.2.4 Parking

There is minimal informal roadside parking on this section of road. Parking will be prohibited within the works zone and within 100 m either side to maintain lane width and safety.

3.4.3 Mitigation measures

3.4.3.1 Through traffic

There is sufficient space to allow two lane running in the peak direction with single lane in the other direction. A temporary speed limit reduction will be required.

3.4.3.2 Property access

If the properties with direct access onto the road are affected, the residents will be advised and works scheduled to best fit in with their requirements. All of the local access roads have alternative entrances, so if a road entrance needs to be temporarily closed, access to the affected properties will still be available via alternative routes.

3.4.3.3 Parking

There should be sufficient parking on adjacent streets for the works to have minimal impact. Communication with users of roadside parking will be essential prior to works being scheduled.

3.4.3.4 Emergency services

By planning and co-ordinating the works in this vicinity with the emergency services (FENZ) it will be possible to ensure that access for emergency services will be maintained.

3.5 Stancombe Rd from Chapel Rd to Kensway Dr (~770 m)

3.5.1 Description

Stancombe Road is an arterial road with a specified minimum carriageway width of 16 m (refer Figure 3.4). This section is a 2 lane, 2-way road with kerb and channel both sides and a flush median (a few small sections have a raised median) with formalised shoulder parking and a painted cycle lane either side for most of its length. It services residential properties and the Fo Guang Shan Buddhist Temple on the north side, with a large recreational reserve (Barry Curtis Park) on the south side.



Figure 3.4: Stancombe Road (image courtesy Transpower).

3.5.2 Assessment of effects

3.5.2.1 Through traffic

This section of Stancombe Road has a posted speed of 60 km/h and carries significant flows (~16,600 VPD) which is a combination of through-traffic and vehicles accessing residential properties.

During active construction periods the works will require a 6 m wide path - thus there will be approximately 10 m of carriageway available for vehicles to pass the works. During passive construction periods the works will require a 3 m width of carriageway with 13 m width being available. Road widths during both active and passive construction will be sufficient to accommodate two-way traffic flows without the need for temporary traffic signals, stop/go controls or localised temporary widening to accommodate traffic flows.

Traffic effects are expected to be of a local nature due to the availability of alternative arterial routes and also due to the width of carriageway available for construction. It is anticipated that parking in the street will need to be temporarily removed during the construction phase.

Stancombe Road is one of three east-west arterials in the Flatbush area, therefore it is likely that the works will result in only a minor reduction in capacity for through traffic overall.

3.5.2.2 Bus services

Three services use this section of Stancombe Road – the 739, 35, and 355. The 35 is a frequent service. The works may require temporary closure or relocation of individual bus stops.

3.5.2.3 Property access

There are a number of residential properties to the north, as well as the Fo Guang Shan Buddhist Temple. The temple has two vehicle entrances on Stancombe Road, one of which access their extensive internal car parking area, with the other being a service entrance. There is an alternative access to the temple's car park from Chapel Road, so the effects on worshippers should be minimal.

A number of residential properties have direct access onto the road, whilst the remainder utilise connecting side roads. The side roads should suffer minimal disruption, as alternative access routes are available. The Barry Curtis Park recreational reserve on the south side has multiple access points both along Stancombe Road and Chapel Road. However, it is a large regional sports facility and hosts a number of school sports and tournaments, which could be impacted by the works along this road at times.

3.5.2.4 Parking

There is currently formalised and informal roadside parking on both sides of the road along most of its length. Parking will be prohibited within the works zone and within 100 m either side to maintain lane width and safety.

3.5.3 Mitigation measures

3.5.3.1 General

Local detours via adjacent roads will facilitate diversionary routes whilst some intersections are temporarily closed during active construction periods.

Plating over the trench will facilitate access during passive construction periods.

At all times during construction the contractor will be expected to comply with the guidelines regarding traffic safety and safe management on the road in accordance COPTTM.

3.5.3.2 Through traffic

Effects on through traffic can generally be managed through implementing the following measures:

- Information boards providing advanced notification of the works start date and expected duration.
- Plating over the trench to facilitate access during passive construction periods.
- In the event that a temporary diversion was required for this section, Kensway Drive and Baverstock Road would be a suitable route.

Work will be scheduled to minimise disruption during active construction periods. At some locations temporary traffic control may be required and stop/go controls or temporary traffic signals will be sufficient to accommodate traffic. During this period a detour via Ormiston Road would be the most suitable option for the bulk of through traffic.

3.5.3.3 Bus services

The works may require temporary closure or relocation of individual bus stops. Additional time may be required to be scheduled into the timetable due to reduced temporary speed limits – this will need to be undertaken in conjunction with the bus operator and a communications plan developed for bus patrons.

3.5.3.4 Property access

If the properties with direct access onto the road are affected, the residents will be advised and works scheduled to best fit in with their requirements. This includes the service entrance for the temple.

All of the local access roads have alternative entrances, so if a road entrance needs to be temporarily closed, access to the affected properties will still be available via alternative routes.

As the adjacent Barry Curtis Park is a large regional sports facility, it will be important to notify schools and sports clubs in the vicinity as well as placing advance warning on Council websites and community noticeboards of any works that may affect access along this stretch of road. However, it would be preferable where possible to liaise with Auckland Council along with the above schools and clubs in order to schedule works to avoid large tournaments and events.

3.5.3.5 Parking

There should be sufficient parking on this road and adjacent streets and private car park areas for the works to have minimal impact. Communication with users of roadside parking will be essential prior to works being scheduled.

3.5.3.6 Emergency services

By planning and co-ordinating the works in this vicinity with the emergency services (FENZ) it will be possible to ensure that access for emergency services will be maintained.

4 Conclusion

The proposed alterations to the designation described above have been designed to streamline the construction methodology and allow easier maintenance access along the cable route. There has been considerable development along the route since the original designation was confirmed and this brings with it additional traffic impacts. However, the additional development has also meant that there are generally good alternative routes that can be used by through-traffic which will help reduce the demand and congestion during periods of active construction, provided that sufficient communication and signage is used.

Because the recently developed areas are broadly similar in nature to those where the original designation remains unchanged (light industrial, residential, recreational and a school), the effects on the transport network along the altered route will be similar to those in the original Notice of Requirement. We have looked in detail at each section of the alteration to designation and have provided specific suitable mitigations for each of these (i.e. community liaison, construction scheduling, FENZ and bus operator communication, route diversions and temporary traffic controls). These mitigations comply with the conditions set in the proposed amended Notice of Requirement (refer Appendix C – Proposed Notice of Requirement Conditions) and take fully into account the unique circumstances of each location.

It can therefore be concluded that the transport effects of the revised route will be similar to, and no worse than, those which were described in the original Application for Notice of Requirement.

5 Data sources

Data was extracted from the following open-source websites:

- Google Earth Pro
- Mobile Road - <https://www.mobileroad.org>
- Auckland Council Geomaps - <https://geomapspublic.aucklandcouncil.govt.nz/viewer/index.html>
- Waka Kotahi "One Network Road Classification" (ONRC) - <https://nzta.maps.arcgis.com/apps/webappviewer/index.html>
- Auckland Transport Future Connect - <https://mahere.at.govt.nz/FutureConnect/>

6 Applicability

This report has been prepared for the exclusive use of our client Transpower New Zealand Limited, with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose, or by any person other than our client, without our prior written agreement.

We understand and agree that our client will submit this report to Auckland Council as the regulatory authority who will use this report for the purpose of processing the Alteration to Designation.

Tonkin & Taylor Ltd
Environmental and Engineering Consultants

Report prepared by:

Authorised for Tonkin & Taylor Ltd by:



.....
Andrew Carline
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.....
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Appendix A Route Analysis

#ID	Road Name	Affected Length (m)	ADT	Surveyed date	HCV (%)	Road width (m)	Lanes	Road classification (ONRC)	Bylaw Speed Limit (km/hr)	Surrounding land zone (majority)	Other
1	East Tamaki Rd	518.99	5432	30/06/2022	9	15.5	3	Regional	60	Light Industry Zone	Majority of the affected road borders open park space, specifically Hampton Park.
2	Accent Drive	932.24	7205	30/06/2020	5.409	11.7	2	Arterial	60	Light Industry Zone	No exit access roads such as Kordel PI, Reg Savory PI and Beale PI are connected onto Accent Dr hence will need to provide alternative access upon closure
3	Stancombe Rd	758.6	9670	30/06/2020	6.99	18	2	Arterial	60	Residential - Mixed housing zone, Residential – Terrace housing and apartment buildings zone, Open Space – Informal recreation zone	Borders Barry Curtis Park
4	Valderama Dr	775	2027	30/06/2020	3	10.5	2	Access	40-50	Residential – Mixed housing suburban zone, Open Space – Informal recreation zone	Access to Southern parking lot and sports field of Mission Heights Junior College
7	Ormiston Rd to Jeffs Rd	1300	8882	30/06/2022	8.17	7.8	2	Regional	60	Rural – rural coastal zone, Residential – Mixed housing suburban	Portion of proposed designation loops around Shepherds Ln. Incoming traffic from Whitford will need to be diverted towards Caldwells Rd at northern junction.

Appendix B Transpower New Zealand Ltd. North
Island Grid Upgrade Project; Notices of
Requirement Documentation; Part X;
Section 17: Traffic and Transport
Effects (MWH, 2007)

Transpower New Zealand Ltd North Island Grid Upgrade Project

Notices of Requirement Documentation

Part X

Section 17: Traffic and Transport Effects



National Grid Upgrade

Transpower NZ Ltd
North Island Grid Upgrade Project

Traffic and Transport Assessment

Notices of Requirement by Transpower NZ Ltd

April 2007

Quality Assurance Statement	
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This document has been produced for external release. Its conclusions are based on the information currently available and may change as further information becomes available either internally or externally.

Transpower NZ Ltd

North Island Grid Upgrade Project Traffic and Transport Assessment

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1 Introduction

This traffic assessment report is one of a series of technical reports and has been prepared to support **Transpower's** Notices of Requirement for designations for a new transmission line between Otahuhu, Pakuranga and Whakamaru, north of Taupo, modifications to existing substations, and new 400kV substations.

The report is divided in a way that parallels the different parts of the North Island Grid Upgrade Project and the various Notices of Requirement documents, and addresses traffic issues at each.

- The three northern substations: Pakuranga, Otahuhu and Brownhill
- The underground cable between Pakuranga and Brownhill Substation sites
- The underground cable between Otahuhu and Brownhill Substation sites
- The overhead line
- The Whakamaru and Whakamaru North Substation

The report is an assessment of the traffic impacts associated with the installation of the infrastructure required for the North Island Grid Upgrade Project, as proposed by Transpower NZ Ltd. As the permanent traffic effects are negligible this report focuses on the traffic impacts and their mitigation during the construction period.

As explained in Part II of the Notices of Requirement documentation, the total development is a staged one, with construction starting in 2009. However, various stages will continue into 2032 (on present estimates), when the line begins to operate at 400kV.

2 Pakuranga Substation

2.1 Introduction

Transformers are to be shipped to the Ports of Auckland for onward transfer using a beam set transporter to the Pakuranga Substation as part of the Grid Upgrade Project.

The journey from the Ports of Auckland to the Pakuranga Substation site is approximately 22km and will be made by road. The roads on the route are under the jurisdiction of either Transit NZ, Auckland City Council or Manukau City Council.

The load will travel through the residential areas of Auckland City and Manukau City.

2.2 Auckland and Manukau City

Greater Auckland is the largest urban area in New Zealand with a population of 1.3 million people. The resident population of Manukau City is now believed to be in excess of 310,000.

Approximately 73,000 commuters enter Auckland's CBD each weekday day, it is therefore important to manage the transit of such a load to ensure that as little disruption is created as possible.

2.3 Transformer Transport to Pakuranga Substation

2.3.1 Description

The Transformers will be transported from the Ports of Auckland to the Pakuranga Substation using a beam set transporter arrangement. Whilst transporting loads of this magnitude is infrequent in New Zealand, it will by no means be unique or unprecedented

2.3.2 Assessment of Effects

The load will generally occupy two lanes of the carriageway, although additional carriageway width may be required when manoeuvring at junctions. The load is expected to travel at speeds from 2 km/h to 15 km/h depending on the terrain. Some local road closures will be required and some parking will have to be restricted.

2.3.3 Mitigation

Transformer dimensions are expected to be approximately 11.5m long, 5m wide and 4m high. The exact dimensions of each load are currently unknown. It is likely that the largest single item of the transformer will weigh about 120 tonnes. Moving the load overnight will mitigate the potential disruption to traffic. Transit New Zealand requires heavy loads to travel at a predetermined time and on a predetermined route. The complete journey will take a number of nights so every morning, the heavy haulage train will be laid up at a suitable location en route, before recommencing the journey the next night.

There is an established procedure to be followed when carrying out this type of transportation. The procedure consists of consultation and a Traffic Management Plan being drawn up and submitted to the Roadway Authorities for approval prior to the work taking place. The Traffic Management Plan will involve consultation with the Police and the relevant City Councils, Roadway Authorities, the haulage company and Transit NZ, among others.

The Traffic Management Plan will contain a method statement breaking the route down and providing a full itinerary, of:

- any deviations to avoid low bridges,
- any bridge strengthening required,
- any lay over points etc,
- a detail description of any road closures or other traffic control measures required,
- a full description of all contingency plans should the convoy break down.

Transit NZ (and/or the local roading authority) will be consulted as to the requirements when crossing bridge structures, as some may require temporary strengthening in order to withstand the additional load.

The haulage company engaged to carry out the transportation will be experienced at transportation at this scale.

A team of people will accompany the transporter and where necessary this will be headed up by the Police with powers to temporarily close roads as the convoy passes. It may also be necessary for utility companies to be on hand during the move to ensure that any problems en-route are solved as quickly as possible i.e. temporary removal / lifting of aerial telephone and power cables or tree trimming.

Previous experience with a 400 tonne load confirms an existing route between Ports of Auckland and Huntly is already known. Certain sections of the Motorway / State Highways are not accessible to high vehicles, although in some circumstances it may be possible to avoid such bridges by using the off and on-slips. This itself can present problems with manoeuvring at intersections, and longer diversions are sometimes inevitable. Local road closures will need to be set up on the affected roads and diversion routes provided.

2.4 Localised traffic disruption at the Pakuranga Substation Site during Construction

2.4.1 Description of Road Network and Access

The Pakuranga Substation is located adjacent to the residential area of Golfland, to the northwest of, and close to Botany Centre. There is one access which is directly onto Golfland Drive. Golfland Drive is a residential collector which leads directly to Botany Downs Road which is an arterial route. Botany Downs Road links directly with the Manukau major arterial road network using Ti Rakau Drive or Te Irirangi Drive. Botany Downs Road, Ti Rakau Drive and Te Irirangi Drive are all heavily trafficked roads, seven days a week. The Te Irirangi Drive/ Ti Rakau Drive intersection is a key, major intersection in Manukau.

The substation access point is located west of and approximately 400m from the Golfland Drive/Botany Downs Road intersection which is traffic signal controlled. Golfland Drive is a loop road which intersects again with Botany Downs Road some 500m further north. Access to the substation via the more northerly intersection is not desirable (nor necessary) as the upper part of the Golfland Road loop passes through residential areas.

Although Ti Rakau Drive, a major arterial route, passes along the southern boundary of the substation site access from the south is not provided, nor is it desirable. A (Howick and Eastern) bus depot fronting onto Ti Rakau Drive is also located on the south side of the site.

Adjacent land uses north, south and east are mainly residential and around Botany centre there are retail and commercial activities.

2.4.2 Assessment of Effects

Parking in the local vicinity of the site might be under heavier than normal demand, due to the addition of contractor vehicles working on the site during the construction period although most of the parking will be on site.

It is anticipated that during construction, the level of additional traffic generated at the site, both in construction workers and delivery vehicles will be barely perceptible in Golfland Drive and will not be sufficient to increase congestion around Botany Town Centre.

Traffic during construction will typically comprise deliveries of construction materials and equipment and the daily movements of construction workers. In the context of the busy urban environment around Botany this traffic will be negligible.

There are no traffic issues associated with the operation of the site, post construction, due to the low level of trips generated through the sites operation.

2.4.3 Mitigation

Adequate facilities should be provided on-site and throughout the construction period to cater for:-

- Parking for workers and deliveries
- Manoeuvre of delivery vehicles so that they may enter and exit the site in forward gear
- Security gate arrangements that do not result in a tail-back into Golflands Drive
- Wheel-wash facilities to prevent dust and mud on the adjacent road network

3 Otahuhu Substation

3.1 Localised traffic disruption at the Otahuhu Substation Site during Construction

3.1.1 Description of Road Network and Access

The Otahuhu Substation is located in Otahuhu on the south eastern shore of and backing onto, the Otarā Creek. **Access is via Hellaby's Road. Hellaby's Road is a no exit road serving both the power stations and substation.** Hellaby's Road joins Bairds Road at a tee-junction. Bairds Road is listed in the Manukau District Plan (by Manukau City Council) as a District Arterial road.

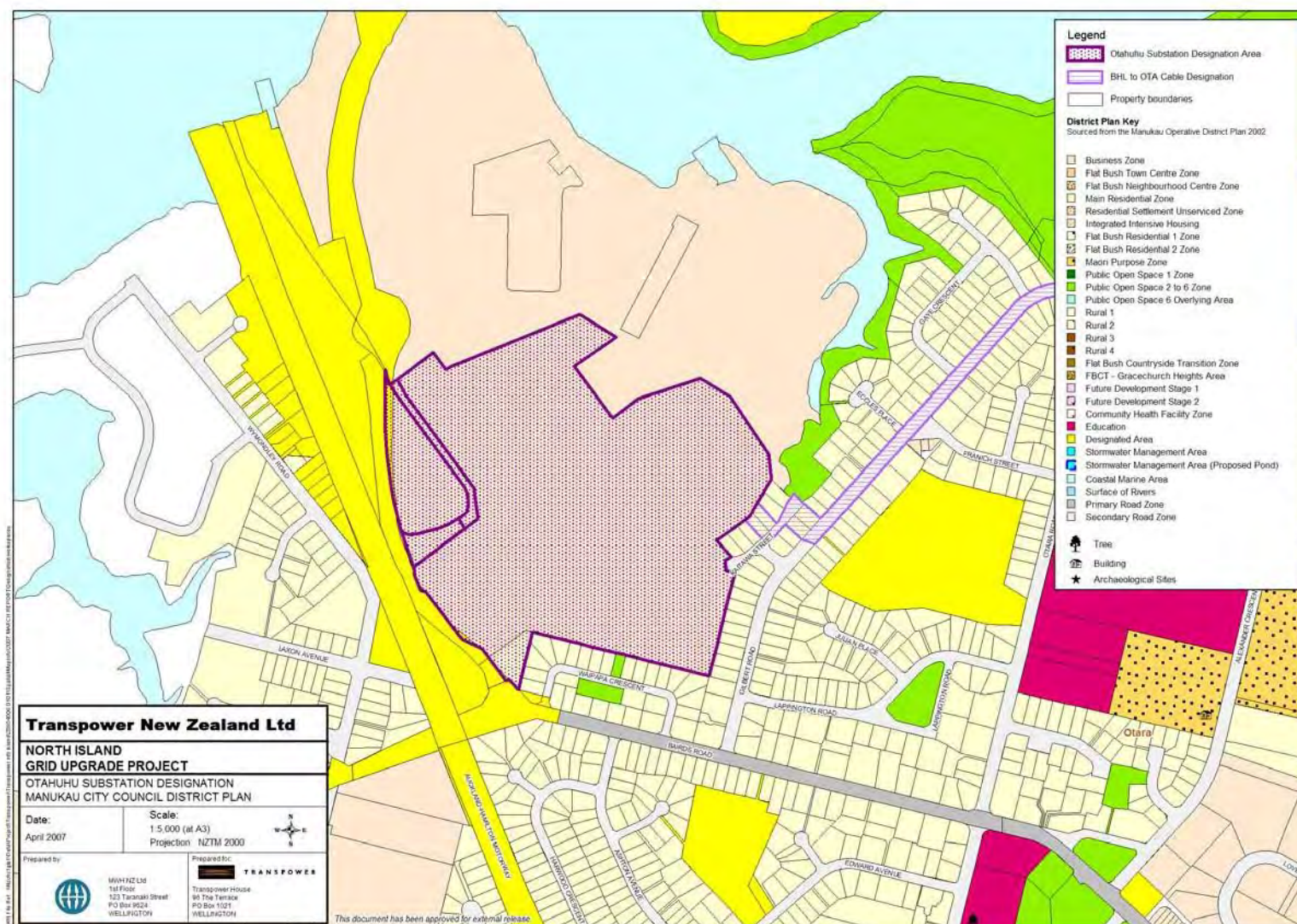
Hellaby's Road runs down the western side of the Substation site, before turning through 90 degrees to head east to the Power Station. The Southern Motorway SH1 runs north-south alongside **part of Hellaby's Road.**

A new motorway intersection is currently being constructed together with the East Tamaki connector, with completion due 2008. The new intersection will also provide a link with Hellaby's Road. It is likely that Hellaby's Road will be reclassified in the hierarchy and given the size and location of the new intersection it will carry an increase in through traffic. Two new signal intersections **are to be installed on Hellaby's Road one set at the junction with Bairds Road and one where the new link joins at the north west corner of the substation site.**

Land to the south and west of the Substation is predominantly residential, including schools and colleges, Bairds Intermediate School, the Manukau Institute of Technology and the Bairds Mainfreight Primary School being the closest, all of which contribute to a high morning peak hour traffic flow.

To the north and east of the site is the Tamaki River and Otarā Creek.

Figure 1: Otahuhu Substation Site Designation Map



3.1.2 Assessment of Effects

Parking in the local vicinity of the site might be under heavier than normal demand, due to the addition of contractor vehicles working on the site during the construction period although most of the parking will be on site.

It is anticipated however that during construction, the level of trips generated at the site, both in construction workers or delivery vehicles will not increase congestion especially with the advent of the new motorway access.

Traffic during construction will typically comprise of deliveries of construction materials and equipment and the daily movements of construction workers. In the context of the busy urban environment around Otahuhu this traffic will be negligible.

There are no traffic issues associated with the operation of the site, post construction, due to the low level of trips generated through the sites operation.

New transformers are not required at the Otahuhu substation as part of the Grid Upgrade Project

3.1.3 Mitigation

Additional contractors parking should be allocated throughout the construction period either on or off the site.

4 Brownhill Road Substation

4.1 Introduction

Transpower's North Island Grid Upgrade requires a substation at 149 Brownhill Road, Whitford, Manukau City. There are two substation options under consideration. These options use either an air insulated switching station or a gas insulated switching station. Both options have three stages, the first stage of which is common to both options. This first stage comprises construction of a 220kV air insulated transition station to connect the overhead line to the underground cables that will carry electrical power onwards to Pakuranga substation. Construction is expected between 2009 and 2011.

Stage 2 comprises construction of either an air insulated switching (AIS) station or a gas insulated switching (GIS) station, connection to the two 220kV cable circuits to Otahuhu substation in 2020-2024 (approximately) and dismantling of the transition station provided in Stage 1. Stage 2 includes major on-site earthworks but again these earthworks will be balanced on-site. Approximately 22,000 m³ of basecourse and crushed rock is expected to need to be hauled in from off-site. The source of these materials is not known at present.

Stage 3 comprises extending the 220kV switching station, installing up to six 400/220kV transformers and installing a 400kV switching station (AIS or GIS, depending on the option). This is expected in 2032- 2034. Further earthworks will not be required. However, it is expected that Brownhills Road will need geometric and widening improvements to accommodate the transporters.

4.2 Stage 1

4.2.1 Introduction

The transition station, stage 1, will be constructed over a period of approximately one to two years. Overhead conductors are to connect to the underground cables via appropriate equipment at this location. Intermediate support structures to the south are to be included within the same designated area.

Initially, civil works will be required to provide a level platform. To facilitate this, earthmoving and construction equipment plus construction materials and construction workers will be transported to and from site. It is anticipated that all surplus cut material will either be used in on-site fill or it will be spoiled on-site. No material is expected to be removed off site for disposal.

The main structural members may be transported to the site in sections for erection on site. In due course when the construction of the sub-station takes place large and heavy loads, transformers, will be moved to site.

A new access is to be constructed and will require a number of approvals from road controlling authorities. The roading authority will dictate the exact standards required. But to facilitate the type of vehicles requiring access and visibility requirements, the site will require access via a route at least 3.5 to 4m wide of adequate strength and suitable geometry to convey the construction vehicles from the existing road network.

The access route will need to be retained to provide for future maintenance.

4.2.2 Assessment of Effects

During the construction of the site access from the public road, localised traffic control and lane narrowing will be required. This may cause very localised traffic disruption. It is anticipated that the construction of the access at the site from the public road will not cause any traffic disruption.

A number of contractors are required to complete the various aspects of the work although it is possible some of the work will be able to run concurrently, increasing the number of vehicles on site at any time. The road network in the local vicinity of the site is not in heavy demand, however, the addition of the contractor vehicles using it to access the site and parking around or near the access could potentially cause problems and reduced visibility creating a safety hazard.

4.2.3 Mitigation

All possible steps will be taken in the planning in order to reduce the impact on traffic during the construction or maintenance of the access. At all times during construction the contractor will be expected to comply with the guidelines regarding traffic safety and safe management on the road in accordance with the NZ Code of Practice for Temporary Traffic Management (COPTTM).

To limit the nuisance value of dust and mud on the local road network all heavy plant leaving site should go through a wheel wash facility, and where necessary the loads should be covered.

Due to issues relating to parking, all contractor vehicles will be able to be accommodated on-site.

It is not anticipated that the transportation of the structure sections will cause congestion problems. Structures can be made in shorter sections and brought to site on normal sized low loaders. The guidance for the movement of oversize loads will be followed where required. A Traffic Management Plan will be submitted to the Roadway Authority for approval prior to the work taking place.

Structure sections can be stored at their place of manufacture until they are required on site to minimise storage time at site.

4.3 Stage 2

4.3.1 Introduction

Stage 2 is the installation of the switching station. The effects of the construction works on Brownhills Road are expected to be similar to Stage 1 in their nature although they are likely to occur over a longer period i.e. 3-4 years. Also. Although the earthworks will be extensive, they will be carried out without the need for disposing of surplus cut materials to spoil off-site. They are likely, however, to include the importation of up to about 20,000m³ of basecourse and fill material. This equates to about 40 truck loads of imported materials per (week)day over a 12 month period. The effects and mitigation measures during construction will be similar to stage 1.

Stage 2 will require the installation of 220kV transformers which weigh approximately 120 tonnes. The transformers are to be shipped to the Port of Auckland for onward transfer to the Brownhill Road Substation using a beam set transporter arrangement.

The road journey from the port to the Brownhill Road Substation site is approximately 30km and will be made by road. The roads on the route are under the jurisdiction of Transit NZ, Auckland City Council or Manukau City Council.

The load will travel through the residential areas of Auckland City and Manukau City. It is therefore important to manage the transit of such a load to ensure that as little disruption is created as possible.

The Transformers will be transported from the port to the substation. Whilst transporting loads of this magnitude is infrequent in New Zealand, it will by no means be unique or unprecedented.

4.3.2 Assessment of Effects

The load will generally occupy a full lane of the carriageway, although additional carriageway width may be required when manoeuvring at junctions. The load is expected to travel at speeds from 2 km/h to 15 km/h depending on the terrain. Some local road closures will be required and some parking will have to be restricted.

4.3.3 Mitigation

Transformer dimensions are expected to be approximately 11.5m long, 5m wide and 4m high. The exact dimensions of each load are currently unknown. It is likely that the largest single item on the transformer will weigh about 120 tonnes. Moving the load overnight will mitigate the potential disruption to traffic. Transit New Zealand requires heavy loads to travel at a predetermined time and on a predetermined route. The complete

journey will take a number of nights so every morning, the heavy haulage train will be laid up at a suitable location en route, before recommencing the journey the next night.

There is an established procedure to be followed when carrying out this type of transportation. The procedure consists of consultation and a Traffic Management Plan being drawn up and submitted to the Roothing Authorities for approval prior to the work taking place. The Traffic Management Plan will involve consultation with the Police and the relevant City Councils, Roothing Authorities, the haulage company and Transit NZ, among others.

The Traffic Management Plan will contain a method statement breaking the route down and providing a full itinerary, of:

- any deviations to avoid low bridges,
- any bridge strengthening required,
- any lay over points etc,
- a detail description of any road closures or other traffic control measures required,
- a full description of all contingency plans should the convoy break down.

Transit NZ (and/or the local roading authority) will be consulted as to the requirements when crossing bridge structures, as some may require temporary strengthening in order to withstand the additional load.

The haulage company engaged to carry out the transportation will be experienced at transportation at this scale.

A team of people will accompany the transporter and where necessary this will be headed up by the Police with powers to temporarily close roads as the convoy passes. It may also be necessary for utility companies to be on hand during the move to ensure that any problems en-route are solved as quickly as possible i.e. temporary removal / lifting of aerial telephone and power cables or tree trimming.

Previous experience with a 400 tonne load confirms an existing route between Ports of Auckland and Huntly is already known. Certain sections of the Motorway / State Highways are not accessible to high vehicles, although in some circumstances it may be possible to avoid such bridges by using the off and on-slips. This itself can present problems with manoeuvring at intersections, and longer diversions are sometimes inevitable. Local road closures will need to be set up on the affected roads and diversion routes provided.

4.4 Stage 3

Stage 3 will not require extensive civil works and the traffic effects and mitigation will not differ markedly from Stages 1 and 2 although it is noted that it will include the installation of transformers with weights of up to 300 tonnes. However, the effects and mitigation measures of transporting the transformers are very similar to those described for the 100 tonne transformers described in the preceding paragraphs.

5 Pakuranga Underground Cable Section

5.1 Introduction

This route exits Transpower owned land on Brownhill Road, Whitford, and follows a ridgeline up to Regis Lane along Redoubt Road which it follows for several hundred metres before it crosses private land over what is identified as '**Future Road**' up to Ormiston Road. From there it is located within road reserve all the way along Caldwell's Road (which is predominantly paper road) before intersecting with Point View Drive. From Point View Drive it crosses private land before meeting the Transpower tunnel entrance at the urban edge of Dannemora in Dunvegan Rise. The areas of private land that the route crosses up to this point are mostly rural lifestyle blocks. The route passes along the edge of Point View Reserve (which is accessed off Caldwell's Road) which contains significant stands of native bush. The existing tunnel, beginning in Dunvegan Rise is located underground all the way to a stormwater reserve adjacent to the existing Pakuranga Substation.

Additional geotechnical investigations undertaken by Transpower have recently concluded that it may not be geotechnically possible to have two underground cable circuits to Pakuranga, and two cable circuits to the existing Otahuhu Substation share the same southern length of the cable route. At the southern end, another option has since been added, which sees the cable run from the transition station site at Brownhill Road, along Brownhill Road, left into Whitford Park Road, left into Sandstone Road to Ormiston Road where it then follows the original route along Caldwell's Road. This southern option is subject to ongoing consultation.

Thus, Option 1 for the cable route is via the Redoubt Road extension area to Ormiston Road, while Option 2 is via Brownhill Road, Whitford Park Road and Sandstone Road.

Information on existing underground services will be used to plan the route and trenching alignment used to ascertain the carriageway width available / required. The exact location of the existing underground services will not be known until trial holes have been dug which will take place prior to construction, once a contract has been awarded.

The work being undertaken by Transpower on the road network will be similar in nature to work undertaken on a regular basis by Transpower and other utility companies, such as the installation of a gas main or water supply pipe.

Both cable route options pass through three distinct areas; the start of the route from Brownhill to Dunvegan Rise is largely rural with the central portion from Dunvegan to Te Koha Road being residential in nature and the final section traversing a commercial / industrial area. For easier understanding and for assessment, the Route has been broken down into a number of sections where each section is relatively homogeneous in terms of land use and/or road type and has characteristics that distinguish it from adjacent sections.

The underground cable will be formed of two circuits, which require a separation of 3.5m minimum. There is an **existing Transpower "tunnel" from Dunvegan Rise to the Pakuranga Substation** which is available to accommodate one circuit of the cable. The new cable will follow this route and be separated by the required 3.5m. The route from Dunvegan Rise to Brownhill Road will require two parallel trenches to be excavated. Typically, the construction methodology will involve the excavation of one of the trenches from start to finish before returning to carry out the process again. The excavation process is expected to be linear, progressing

from one end of the underground route at Brownhill Road to the other at Pakuranga station. The trench will be excavated in lengths of up to 600-800m at a time with each section taking about 6-8 weeks. The nature of the construction will at certain times be '**active**' with construction activity moving steadily along the trench line. Active periods are likely to occur at each location three times, once each for excavation, cable-laying and additional trench reinstatement and each active period will last typically for a day. For the rest of the 6-8 week construction period, the construction will be '**passive**' with the trench open awaiting cable-laying and/or reinstatement.

Following on from the main works will be final trench reinstatement; this has to follow on some time after the main works in order to allow the trench to settle through the running of traffic over it. This is normal practice. The same traffic management process will be in force during this work but the working space and the construction period will be a lot smaller and shorter respectively. The effects from this will be negligible on all but the main junctions where these phases of the works have been highlighted.

During periods of active construction the road width required to accommodate plant, equipment and labour safely will typically be 6m although where space is constrained techniques can be used to reduce this width; the trade-off is that the works will take longer. During passive construction periods a 3m width is required to safely accommodate the open trench.

As active construction progresses along roads, access to individual driveways will become unavailable for short periods, typically for a day. To minimise disruption to residents it is anticipated that they will be kept fully informed of the periods when their access will be interrupted and if necessary alternative secure parking will be made available close to their homes. In the event of an emergency, access to a particular residency will be made available by means of steel plates that will have been aside for such an instance.

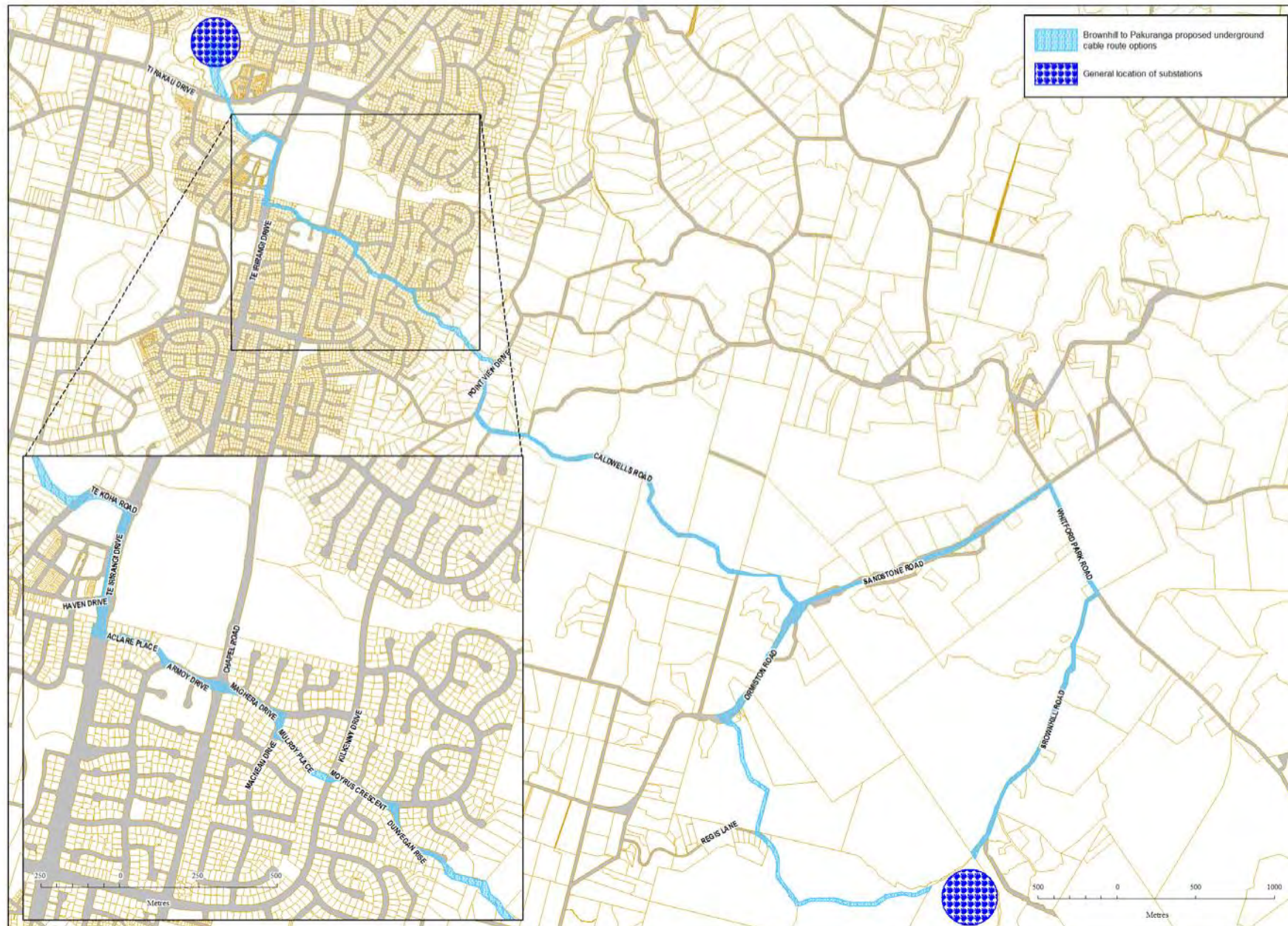
During passive construction periods access to driveways will be maintained by laying temporary steel plates over the open trenches, although these steel plates are unlikely to be suitable for heavy traffic. Heavier duty steel plates will be used on the carriageway sections where heavier vehicles will be present and where access over an open trench is required. The laying out of signs and protection at the roadworks will be fully compliant with the COPTTM during active and passive phases of construction.

Pedestrian safety will be ensured at each step of the works. Where construction closes a road or footway an alternative route will be signed, or the footway diverted. Barriers will be used to zone off identified safety hazards and steel plates will be laid where necessary for pedestrian access. At traffic controlled crossing points, every effort will be made to maintain the level of service for pedestrians.

At all times during construction the contractor will be expected to comply with the guidelines regarding traffic safety and safe management on the road in accordance with COPTTM.

5.2 Brownhill Road Substation to Whitford Park Road

This section describes the cable route and its development, and actual and potential traffic and transport effects, from south to north. The route options are shown on the map which follows.



5.2.1 Description

Brownhill Road is a rural access road which is sealed without kerb for the initial 2.7km from the intersection with Whitford Park Road and then is unsealed for the remainder. Brownhill Road is a cul-de-sac and it is typically approximately 7m wide with wide berms on either side. During active construction periods the works will require a 6m width which potentially cannot be accommodated in the available carriageway without closing the road completely. The berm is potentially wide enough for the two cable routes to be located on either side of the carriageway and during active construction the carriage way will be narrowed to 4m to accommodate construction traffic and agricultural machinery. Stop/go controls will be sufficient to accommodate traffic. During Passive construction there will be no disruption to the carriageway. In Stage 3 of constructing the Brownhill Road Substation (approximately 2030) heavy transformers will be transported to the site via this road section using special vehicles.

5.2.2 Assessment of Effects

5.2.2.1 *Transportation Network*

- Extent of effects

The effects of work in Brownhill Road are expected to be local and will not be transferred to the arterial road network. The traffic is low intensity and is mostly residential and agricultural. Brownhill Road is a cul-de-sac and there is no alternative diversionary route. Heavy agricultural machinery and the movement of livestock may need to be accommodated. Part of the road is unsealed and is likely to be damaged by construction traffic and materials deliveries during all three construction stages.

- Through Traffic:
There is no through traffic along Brownhill Road.
- Bus Services:
There is no bus service.

5.2.2.2 *Property Access*

There are a small number of private driveways and field accesses along Brownhill Road which will have to be closed during active construction.

5.2.3 Mitigation Measures

5.2.3.1 *Transportation Network*

In the worst case the unsealed section of Brownhill Road may need to be sealed. Similarly, a number of modifications to the geometry and width of Brownhill Road may be required to accommodate both cable circuits along both the sealed and currently unsealed sections. As this road will also have to accommodate very heavy loads in future years (Stage 3) other upgrading measures may be required such as culvert and bridge replacement, ground stabilisation as well as geometric improvements to straighten bends and to smooth the vertical alignment. The current design of Brownhill Road should be assessed and re-considered in the light of the construction impacts of all three future stages, so that the most economic and beneficial whole - life strategy

for the 25-30 year programme for the substation is planned. This may mean upgrading Brownhills Road at the outset in order to meet all these future construction requirements.

5.2.3.2 *Property Access*

- General
 - Work will be scheduled to minimise disruption during active construction periods.
 - The passage of agricultural machinery will be accommodated
 - Liaison will be undertaken with local residents and farmers to minimise the effects on disrupted access
 - Plating over trenches will facilitate access during passive construction periods.
 - At all times during construction the contractor will be expected to comply with the guidelines regarding traffic safety and safe management on the road in accordance COPTTM.

5.3 Whitford Park Road to Sandstone Road

5.3.1 *Description*

Whitford Park Road is a Regional Arterial road of a rural nature it is un-kerbed and on average 12m wide with wide berms to either side. During active construction periods the works will require 6m width - thus there will be 6m of carriageway available for vehicles to pass the works. This will require the imposition of Traffic Management and a Temporary speed restriction of 60km/h. During passive construction periods the works will require a 3m width of carriageway with 9m width being available to accommodate two-way traffic flows.

There will be one circuit located on each side of the carriageway which will require the carriageway to be crossed at the intersection with Brownhill Road. Whitford Park Road will be crossed by undertaking a trench and plating. This will be a two stage process only affecting half the carriageway at any time. During the active construction the available lane widths will be reduced to a minimum of 2.75m and temporary speed restrictions imposed. Plates will be installed in the trenches and the trenches back-filled at a later date.

The sections along Whitford Park Road will be completed using two stages – with the first circuit being installed on one side of the road, then the second circuit being installed on the other side of the road.

5.3.2 *Assessment of Effects*

5.3.2.1 *Transportation Network*

- Extent of effects
The traffic effects will be very local.
- Through traffic
All of the traffic is through traffic
- Bus services
No bus services will be directly affected

5.3.2.2 *Property Access*

- Private Driveways and field access
There are a few accesses that will require to be closed during active construction.

5.3.3 Mitigation Measures

5.3.3.1 *Transportation Network*

- Through Traffic:
 - At all times during construction the contractor will be expected to comply with the guidelines regarding traffic safety and safe management on the road in accordance with COPTTM.

5.3.3.2 *Property Access*

- General
 - Work will be scheduled to minimise disruption during active construction periods
 - Liaison will be undertaken with local residents to minimise the effects on disrupted access
 - At some locations temporary traffic control will be required and stop/go controls or temporary traffic signals will be sufficient to accommodate traffic.
 - Plating over trenches will facilitate access during passive construction periods.
 - Local deviations via adjacent roads will facilitate diversionary routes.
 - At all times during construction the contractor will be expected to comply with the guidelines regarding traffic safety and safe management on the road in accordance with COPTTM.

5.4 Whitford Park Road / Sandstone Road Intersection

5.4.1 Description

The Whitford Park Road / Sandstone Road intersection is a staggered T- arrangement. Whitford Park Road is the primary route with the minor intersection arm from Sandstone Road being controlled by Give Way signage. One circuit of the cable route will cross Whitford Park Road at the intersection. Whitford Park Road is in excess of 12m wide at this location and the active construction will be undertaken in a staged process with half the carriageway being completed at any time. Traffic management will be instigated with both directions of traffic being maintained with reduced lane width and speed restrictions being imposed. Plates will be installed over the trenches for traffic to over run with final reinstatement will be required at a later date. The cable route in the western berm of Whitford Park road will continue into the southern berm of Sandstone Road.

5.4.2 Assessment of Effects

5.4.2.1 *Transportation Network*

- Extent of effects
The traffic effect will be localised.

- Through Traffic
All traffic affected will be through traffic
- Bus Service
There is no bus service along this route.

5.4.2.2 *Property Access*

No access to properties will be affected by this stage of construction.

5.4.3 Mitigation Measures

5.4.3.1 *Transportation Network*

- Through Traffic:
 - At all times during construction the contractor will be expected to comply with the guidelines regarding traffic safety and safe management on the road in accordance with COPTTM.
 - Work will be scheduled to minimise disruption during active construction periods
 - Temporary traffic control will be required and stop/go controls or temporary traffic signals will be sufficient to accommodate traffic.
 - Plating over trenches will facilitate access during passive construction periods.

5.5 Sandstone Road - Whitford Park Road to Caldwell's Road.

5.5.1 Description

Sandstone Road is an undulating Regional Arterial road of a rural nature of on average 18m wide with kerbed edge line and wide berm. The carriage way consists of three traffic lanes with the central lane acting as a passing lane for the uphill sections, changing priority along its length. During active construction periods the works will require 6m width - thus there will be 12m of carriageway available for two lanes of vehicles to pass the works. During passive construction periods the works will require a 3m width of carriageway with 15m width being available. It would be advisable to only maintain two lanes of traffic throughout the entire period of active and passive construction. The passing lane will need to be closed during the construction period.

At the location where the cable turns to the north to enter Caldwell's Road there will be the requirement for one circuit to cross Sandstone Road with the cable route. As Sandstone Road is in excess of 18m wide at this location, the active construction will be undertaken in a staged process with half the carriageway being completed at any time.

The sections along Sandstone Road will be completed using two stages – with the first circuit being installed on one side of the road, then the second circuit being installed on the other side of the road.

5.5.2 Assessment of Effects

5.5.2.1 *Transportation Network*

- Extent of effects
Traffic effects will be localised but the temporary loss of the passing lane could result in minor delays as faster vehicles will not be able to overtake slower-moving heavy vehicles on the climbing sections of Sandstone road.
- Through traffic
All traffic along this route is through traffic, the construction works are likely to delay the through traffic to a limited extent.
- Bus services
There is no bus service along this route.

5.5.2.2 *Property Access*

- Private driveways
There are a limited number of private driveways and field accesses along Sandstone Road which will have to be closed during active construction.

5.5.3 Mitigation Measures

5.5.3.1 *Transportation Network*

- Through traffic
 - At all times during construction the contractor will be expected to comply with the guidelines regarding traffic safety and safe management on the road in accordance COPTTM.

5.5.3.2 *Property Access*

- General
 - Work will be scheduled to minimise disruption during active construction periods.
 - Liaison will be undertaken with local residents to minimise the effects on disrupted access
 - Plating over trenches will facilitate access during passive construction periods.
 - At all times during construction the contractor will be expected to comply with the guidelines regarding traffic safety and safe management on the road in accordance with COPTTM.
- Private driveways
There are a limited number of private driveways along Sandstone Road which will have to be closed during active construction. They will require the temporary use of plates during passive construction.

5.6 Caldwell's Road (Paper Road)

5.6.1 Description, effects and mitigation

As this is a paper road there will be no traffic effects except for access by construction traffic and plant at either end.

5.7 Caldwell's Road to Point View Drive

5.7.1 Description

Caldwell's Road is a sort cul-de-sac length of access road with typical rural characteristics through undulating terrain, providing access to Point View Reserve and a few large lifestyle sections. The carriageway runs along a ridge, is typically between 5m and 7m wide with no kerb and the berm is narrow, steep and heavily vegetated with fully grown trees and bush.

5.7.2 Assessment of Effects

5.7.2.1 *Transportation Network*

- Extent of Effects

Geographically, the effects will very local although access to a public facility, the Point View Reserve, will be interrupted. However, the construction requirements will be quite extensive with the cables having to be located on either side of the road to maintain the minimum 3.5m separation and the road will have to be widened to at least 6m. As the narrow sections have a combination of steep banks or steep drops this will require significant reconstruction of the existing road with the removal of sections of bank and the provision of retaining walls. Specialist construction method will have to be utilised that will maintain access to the properties and the reserve. Both cables will be laid concurrently whilst the road is under traffic management to reduce delays.

- Through Traffic

There is no through traffic.

- Bus Services

There are no bus services in Caldwell's Road.

5.7.2.2 *Property Access*

Only a small number of properties will be affected

5.7.3 Mitigation Measures

5.7.3.1 *Transportation Network and Property Access*

- General
 - No temporary diversionary routes are available
 - Close liaison will be undertaken with local residents to minimise the effects on disrupted access
 - Due to the complexities of terrain, this section of Caldwell's Road will need to be reconstructed totally to accommodate the cables
 - Temporary traffic control will be required. Local residents will effectively have to access their properties through an active construction site
 - Plating over trenches will partially facilitate access during active and passive construction periods.
 - At all times during construction the contractor will be expected to comply with the guidelines regarding traffic safety and safe management on the road in accordance with COPTTM.

5.8 Point View Drive – from Caldwell's Road to Unformed Section of Caldwell's Road

5.8.1 Description

Point View Drive is a residential collector-distributor with generally rural characteristics. The alignment closely follows the hilly terrain with steep gradients and a number of bends that would be regarded as sub-standard by current design standards. The carriageway is 7-8 m wide, is un-kerbed and has narrow shoulders. To locate both circuits along this route, there will either have to be one located in the road and one in the berm. During active construction periods the works will require 6m width – which cannot be provided whilst keeping the road open to through traffic. The Road will have to be closed to through traffic and a construction method adopted utilising steel plates to cover the trench immediately that will keep the road open for access to properties. Both trenches would be completed concurrently during the period of road closure

5.8.2 Assessment of Effects

5.8.2.1 *Transportation Network*

- Extent of Effects

Point View Drive would need to be closed as a through route during the construction period although local access for residents of Point View Drive would be available from either end.
- Through Traffic

Point View Drive carries reasonable volumes of through traffic particularly during peak periods, many of whom use this route to avoid the congestion around Botany town centre. Due to the residential nature of the road the majority of the traffic in Point View Drive will be local traffic. Diversion routes will be in place to inform and divert through traffic and for residential access.
- Emergency Services

Access for emergency vehicles needs to be considered as the potential diversionary routes are circuitous.

- Bus Services
There are no bus services on Point View Drive

5.8.2.2 *Property Access*

Access to properties will have to be carefully co-ordinated with the local residents and they will have to be kept informed of the progress of the works. The residents of the properties affected by the work will be kept informed of planned progress and which direction along Point View Drive they will need to utilise to gain access to their properties.

5.8.3 Mitigation Measures

5.8.3.1 *Transportation Network*

- Through Traffic
 - Temporary diversionary route will be prepared and sign-posted via Whitford Park Road, Chapel Road and Kilkenny Drive.
 - A planned co-ordinated management of the works as a whole will ensure that the emergency services are aware of the road closure and the extent of the work and the diversion route that is required to gain access to each property along Point View Drive.
 - At all times during construction the contractor will be expected to comply with the guidelines regarding traffic safety and safe management on the road in accordance with COPTTM.

5.8.3.2 *Property Access*

- General
 - Work will be scheduled during active construction periods to minimise disruption.
 - Access to properties will be carefully co-ordinated with residents who will be kept informed of progress of the works. Residents will also be advised and updated on diversionary routes and direction for access as works proceed,
 - At all times during construction the contractor will be expected to comply with the guidelines regarding traffic safety and safe management on the road in accordance with COPTTM.

- Private driveways

The private driveways which will have to be closed during active construction will require the temporary use of plates during passive construction

5.9 Point View Drive- Dunvegan Rise – Moyrus Crescent to Kilkenny Drive

5.9.1 Description

The initial section between Point View Drive and Dunvegan Rise is off-road.

From Dunvegan Rise to Pakuranga substation the existing underground cable tunnel will be utilised for one of the circuits. Only one trench will be required from this point through to Pakuranga substation. The new trench

alignment will be determined, in part, by the preferred clearance of 3.5m from the circuit to be located in the existing tunnel.

Dunvegan Rise is a residential cul-de sac off Moyrus Crescent with a carriageway is 6.5m wide with 6.5m berms on either side consisting of grassed strip adjacent to carriageway and concrete sidewalks. There are private driveways on both sides of the carriageway and undeveloped land at the top of the road. During active construction the works will require 6m width which cannot be accommodated in the carriageway whilst keeping the road open to traffic. It is planned that the trench will be located in the carriageway as generally the tunnel occupies one berm whilst existing services and utilities will be in the other berm. So whilst residential property access will be feasible to homes during this period, traffic management measures such as temporary one-way working will be necessary. During passive construction there will be no disruption to the carriageway.

Moyrus Crescent is a residential collector road connecting to Kilkenny Drive and feeding a residential area of crescents and cul-de sacs. The carriageway is 12m wide with 7m wide berms, comprising grassed and planted areas adjacent to the carriageway and with concrete footpaths either side. There are a number of private driveways and two access roads to the north and one to the south. During active construction periods the work will require 6m width – thus there will be 6m of available carriageway for vehicle to pass. During passive construction the works will require a 3m width of carriageway with 9m available for general traffic.

5.9.2 Assessment of Effects

5.9.2.1 *Transportation Network*

- **Extent of effects**
The effects are expected to be local in nature with access to Moyrus Crescent available from either end and signage of the works should deter any through traffic from utilising the route.
- **Through traffic**
There is no through traffic on Dunvegan Rise. Moyrus Crescent provides for some degree of through traffic as it links to a number of residential cul-de sacs, crescents and drives. All the roads will remain accessible except the cul-de-sacs as identified below. Moyrus Crescent is not used as a rat-run to avoid busy intersections and it serves residential traffic only.
- **Bus Services**
There is no bus service along Moyrus Crescent.

5.9.2.2 *Property Access*

Depending on which side of Moyrus Crescent the cable will be located the following access may be affected.

- Nephin Place
- Nad Place
- Newbliss Crescent

During active construction periods access to Nephin Place, Nad Place and Newbliss Crescent will be closed

5.9.3 Mitigation Measures

5.9.3.1 *Transportation Network*

- Through Traffic
 - The alternative access to Moyrus Crescent via Kilkenny Drive will provide an alternative access route for traffic that will avoid the works.
 - Plating over the trench where it crosses access roads will facilitate access during passive construction periods.
- General
 - Work will be scheduled to minimise disruption during active construction periods.
 - Liaison will be undertaken with local residents to minimise the effects on disrupted access
 - At all times during construction the contractor will be expected to comply with the guidelines regarding traffic safety and safe management on the road in accordance with COPTTM.
- Private driveways

The private driveways which will have to be closed during active construction will require the temporary use of plates during passive construction

5.10 Crossing Kilkenny Drive – From Moyrus Crescent to Mulroy Place

5.10.1 Description

Kilkenny Drive carriageway is 10m wide at the intersection with Moyrus Crescent. The cable route will have to pass under Kilkenny Drive and then continue across an off-road section of open land to Mulroy Place. The crossing of Kilkenny Drive will be done in two stages with half the carriage way being excavated and trenched. Traffic management measures such as temporary one-way working and diversionary routes being identified will be necessary.

5.10.2 Assessment of Effects

5.10.2.1 *Transportation Network*

- Extent of effects

Disruption due to construction at this location without careful management and mitigation measures could lead to congestion. Kilkenny Drive is a busy arterial route carrying significant through traffic flows and serving a number of schools. It is reasonable to expect that the presence of the roadworks will discourage some through traffic with this traffic diverting to alternative routes.
- Through traffic

Capacity at this section of road will be temporarily halved so the trenching works are likely to cause disruption to the through traffic; however, alternative routes are available. The works for the road crossing are expected to be of limited duration.
- Bus Service

There are three bus services using Kilkenny Drive that will be disrupted, they are routes 55, 61 and 68.

5.10.2.2 *Property access*

There are no property accesses that will be directly affected by the works

5.10.3 Mitigation Measures

5.10.3.1 *Transportation Network*

- **Through Traffic**

A temporary diversion route via Chapel Road and/or Dannemora Drive can be provided to alleviate the constriction on Kilkenny Drive when active construction is proceeding.

- **General**

Diversion route would be provided from all directions, signed at some distance from the road closures to provide drivers with the opportunity to change their route to avoid the location.

- **Bus Services**

The construction period will be of limited duration, however, during active construction periods buses operating in Kilkenny Drive will be affected by delays at the works and additional time may need to be scheduled into the timetables – this will be undertaken in conjunction with the bus operator.

5.10.3.2 *General*

Diversion routes would be signed further from the road closures than the intended diversion route to provide drivers with the ability to change their route earlier, in order to avoid all the affected roads.

At all times during construction the contractor will be expected to comply with the guidelines regarding traffic safety and safe management on the road in accordance with COPTTM.

5.11 Mulroy Place, MacNean Drive & Maghera Drive – between Kilkenny Drive and Chapel Road

Mulroy Road is a residential cul-de sac off MacNean Drive which connects to Maghera Drive. Mulroy Drive has a carriageway which is 6m wide with 9m berms on either side consisting of grassed strips adjacent to the carriageway and concrete footpaths. There are private driveways on both sides of the carriageway and open parkland at the top of the road. During active construction the works will require 6m working width which cannot be wholly accommodated in the carriageway whilst keeping the road open to traffic so the trench will be located in one of the berms and only part of the carriageway will be utilised by construction traffic. Whilst access will be feasible to homes during this period, traffic management measures such as temporary one-way working will be necessary. During passive construction there will be no disruption to the carriageway.

MacNean Drive is a residential road which links to Chapel Road and Kilkenny via Maghera Drive. The carriageway is 9m wide with wide berms at the intersections with Mulroy and Maghera. During active construction periods the work will require 6m width – thus there will be 4m of available carriageway for vehicle

to pass, traffic management measures such as temporary one-way working will be necessary. During passive construction the works will require a 3m width of carriageway with 6m available for general traffic which is adequate for two way traffic.

Maghera Drive provides residential access and a connection between Chapel Road and Kilkenny Drive. The carriageway is 11m wide with an 8m berm to either side. The cable route could be accommodated in the berm with minimum disruption. If located in the road, during active construction 6m width will be required – thus 5m will be available for vehicles to pass. This will require traffic management measures, imposing a 30km/h with two way traffic or temporary one way working. During passive construction 3m will be required – thus 8m will be available for traffic.

5.11.1 Assessment of Effects

5.11.1.1 *Transportation Network*

- **Extent of effects**
The effects are expected to be local as alternative routes are generally available for residential traffic
- **Through traffic**
There is no through traffic on Mulroy Place, which serves residential access traffic only. MacNean Drive provides for some degree of through traffic as it links to a number of residential cul-de sacs and has access from both ends. Maghera Drive is a through route between the signalled intersection with Chapel Road and the un-signalled T-junction with Kilkenny Drive. All the roads will remain accessible except the cul-de-sacs as identified below.
- **Bus Services**
There is no bus service along any of the roads.

5.11.1.2 *Property Access*

Depending on which side of Maghera Drive the cable will be located the following accesses may be affected. If the cable is located in the northern side of the carriageway or berm

- **Mellefont Close**
- **Magee Place**
During active construction periods access to Mellefont Close and Magee Place will be closed.

5.11.2 Mitigation Measures

5.11.2.1 *Transportation Network*

- **Through Traffic**
 - Alternative access between Kilkenny Drive and Chapel Road is available for traffic wanting to avoid the worksite.
 - Plating over the trench where it crosses access roads will facilitate access during passive construction periods.

- General
 - Work will be scheduled to minimise disruption during active construction periods.
 - Liaison will be undertaken with local residents to minimise the effects on disrupted access
 - At all times during construction the contractor will be expected to comply with the guidelines regarding traffic safety and safe management on the road in accordance with COPTTM.
- Private driveways

The private driveways which will have to be closed during active construction will require the temporary use of plates during passive construction

5.12 Chapel Road Intersection with Maghera Drive and Armoy Drive

Chapel Road intersection is on the north - south District Arterial route through this area, with single lane carriageways running to the north and south of the junction. At the junction the lanes flare over a length of some 100m adding additional capacity. During active construction periods there are two options available, closing the junction to all movements or installation of temporary four way signals. These options are discussed below.

- Close the junction to all movements

Chapel Road junction forms a crossroads allowing all movements. The north south movement consisting mainly of through traffic. The east west movement is lighter feeding residential areas.

It is reasonable to expect that the presence of the **roadwork's** will discourage the majority of the through traffic and such traffic will divert to alternative routes of which there are at least two routes of appropriate size and capacity to take the increased volume for both north – south and east – west movements.

- Install temporary 4 way traffic signals.

The works will require some of the lanes to be closed off, to allow a contraflow to operate and possibly some movements banned. The existing signals will require switching off and temporary four way signals erected. Pedestrian movements could be catered for within the traffic stages. Plates would be installed over the trenches across carriageways and at the junction with final reinstatement required at a later date.

5.12.1 Assessment of Effects

5.12.1.1 *Transportation Network*

- Extent of effects

Close the junction to all movements

- Without mitigation measures there is potential for congestion, which could block back to the alternative routes hence reducing the capacity of these.
- Access to properties will be limited along certain approach routes.

- There are 3 bus services, routes 55, 61 and 68, which use the Chapel Road junction that will be disrupted and will require a diversion.
- A planned co-ordinated management of the works in this vicinity will ensure that access for the emergency services will be maintained at all times on all routes.

5.12.1.2 *Four way signals*

- Due to the reduction of lanes and losses due to running each approach separately to remove conflicting movements, four way signals will significantly reduce the capacity of the signals. Also the works will take longer due to the number of sections that the work will have to be broken down into, lengthening the period over which the works will have to take place.
- Access to properties will not be affected
- There are three bus services, routes 55, 61 and 68, which uses the Chapel Road junction that could suffer delays but could be maintained albeit with some rescheduling to allow for delays.
- A planned co-ordinated management of the works in this vicinity will ensure that access for the emergency services will be maintained at all times on all routes.

5.12.2 Mitigation Measures

5.12.2.1 *Transportation Network*

Close the junction to all movements

Advanced notification and adequate signing would be deployed to divert traffic away from the works with suggested diversion routes being:

- From the South
Chapel Road closed at Smales Road/ Kilkenny intersection, except for access. Diversion for North and West bound traffic, turn left onto Smales Road at the intersection with Chapel Road.
Diversion for North and East bound traffic, turn right onto Kilkenny Drive at the intersection with Chapel Road.
- From the North
Chapel Road closed at Ti Rakau Drive, except for access.
Diversion for Eastbound traffic, turn left onto Dannemora Drive at the junction with Chapel Road, or even further back, turn left into Kilkenny Drive.
Diversion for Westbound traffic to turn right at Ti Rakau Drive and then left onto Ti Irirangi Drive.
- From the East
Maghera Road closed at junction with Kilkenny Drive, except for access.
Diversion via Kilkenny Drive and Dannemora Drive.

- From the West
Armoy drive will be closed for access only and all residential traffic will depart by the access roads connecting to Te Irirangi Drive to the west, Chapel Road to the east (via Carlingford) and Smales Road to the south.

Access to properties will be maintained at all times past the road closures and information will be provided to residents as to the extent of the road closures.
- There are three bus services, routes 55, 61 and 68 that use the Chapel Road junction. During active construction periods this bus will require a diversion route – this will be undertaken in conjunction with the Bus Operator. Through discussion it may be possible to maintain some access for the buses through the closed junction but this may, depending on the section of carriageway being worked on.

Four way signals

- Due to the reduction of lanes and the loss of movements that will be able to run together, four way signals will significantly reduce the capacity of the junction although some movement could be banned temporarily. These banned routes would require signage as detailed in the section above.
- Diversions would need to be signed at some distance offering acceptable alternative routes to reduce the through traffic.

5.12.2.2 General

Diversion routes would be signed further from the road closures than the intended diversion route to provide drivers with the ability to change their route earlier, in order to avoid all the affected roads.

The work can be easily broken down into distinct sections, even so it is expected that the work will take more than the time slot available between the peak hours of a weekday, for this reason work is expected to be scheduled to take place over several weekends.

Once a contractor has been engaged, they will be required to study this junction and review the various options such that the eventual traffic impact is minimised.

At all times during construction the contractor will be expected to comply with the guidelines regarding traffic safety and safe management on the road in accordance with COPTTM.

The private driveways which will have to be closed during active construction will require the temporary use of plates during passive construction

5.13 Armoy Drive and Aclare Place – between Chapel Road and Ti Irirangi Drive.

5.13.1 Description

Armoy Dive is a residential road connecting Chapel Road and Smales Road and feeding a large residential area comprising of crescents and cul-de sacs. The carriageway is of 12m width with 7m berms, made up with grassed planted areas adjacent to the carriageway and concrete sidewalks. There are a number of private drive ways to the south of the carriageway and one access road, Arigna Place. To the North there is Gillard Reserve an open grassed area which undulates towards a drainage gully. During active construction periods the work will require 6m width – thus there will be 6m of available carriageway for vehicle to pass. During passive construction the works will require a 3m width of carriageway with 9m available for general traffic.

Aclare Place is a residential cul-de sac off Amoy Drive with a carriageway of 6m width with 7m berms on the northern side consisting of perpendicular parking bays and a concrete sidewalk. The southern berm consists of a narrow grassed strip and concrete walkway. There are private driveways on both sides of the carriageway and an access route at the end, Franco lane 3.5m wide connecting to Borris Close. During active construction the works will require 6m width which cannot be accommodated in the carriageway whilst keeping the road open to traffic. It can be assumed that the trench will be located in one of the berms and only part of the carriageway will be utilised by construction traffic. So whilst access will be feasible to homes during this period, traffic management measures such as temporary one-way working will be necessary. During passive construction there will be no disruption to the carriageway if the trench is in the berm.

5.13.2 Assessment of Effects

5.13.2.1 *Transportation Network*

- **Extent of effects**
The effects are expected to be local with alternative routes of access available.
- **Through traffic**
There is no through traffic on Aclare Place, residential access traffic only. Armoy Drive provides for some degree of through traffic as it links to a number of residential cul-de sacs, crescents and drives and connects between Smales Road and Chapel Road. All the roads will remain accessible except the cul-de-sacs as identified below.
- **Bus Services**
There is no bus service along Amoy Drive.

5.13.2.2 *Property Access*

Depending on which side of Armoy Drive the cable will be located the following access may be affected.

- **Arigna Place**
During active construction periods access to Arigna Place will be closed.

5.13.3 Mitigation Measures

5.13.3.1 Transportation Network

- Through Traffic
 - There are a number of alternative routes of access to Amoy Drive that will provide a route for access traffic that wants to avoid the worksite.
 - There is an alternative access route for residential traffic to Aclare Place, via Borris Close and Franco Lane.
 - Plating over the trench when it crosses access roads will facilitate access during passive construction periods.
- General
 - Work will be scheduled to minimise disruption during active construction periods.
 - Liaison will be undertaken with local residents to minimise the effects on disrupted access
 - At all times during construction the contractor will be expected to comply with the guidelines regarding traffic safety and safe management on the road in accordance with COPTTM.
- Private Driveways and Parking

The private driveways which will have to be closed during active construction will require the temporary use of plates during passive construction.

There will be a loss of off on-road parking during the entire construction phase.

5.14 Te Irirangi Drive Crossing

The section between Aclare Place and Te Irirangi Drive is off-road, where the cable meets Te Irirangi Drive it is required to cross the carriageway and then follow Te Irirangi Drive for a distance of some 400m. Te Irirangi Drive is a key regional arterial road for Manukau. It is a four lane dual carriageway with a wide grassed median containing numerous palm trees. Te Irirangi drive experience heavy flows in both directions throughout the week and at weekends.

The cable circuit will be trenched across one carriageway at a time in a two-stage process so that one whole running lane is always kept open on the carriageway where works are taking place. The other carriageway will be fully open. Once one carriageway crossing has been crossed in this two-stage manner work will commence on the second carriageway in a similar manner. To minimise weekday congestion this work is likely to be undertaken over weekends, with the traffic management measures removed in the mean time.

5.14.1 Assessment of Effects

5.14.1.1 Transportation Network

- Extent of effects

Disruption due to construction at this location, even with careful management and mitigation measures, could lead to extensive congestion. It is reasonable to expect that the presence of the roadworks will discourage some through traffic although this traffic will divert to alternative routes of which there will be at least two that are of appropriate size and capacity to take the increased volume.
- Through traffic

Capacity at this section of the road will be substantially reduced and disruption and delay for through traffic can be expected although it will be of limited duration although there are a number of alternative routes available. Congestion from the roadworks could result in traffic tailing back along Te Irirangi Drive both in the north and southbound direction, depending on which carriageway is being trenched. Congestion could tail back into adjacent intersections and could affect traffic movement into and around Botany town centre.

- **Bus Services**
There is one bus service (route 66) using Te Irirangi Drive that will be affected.
- **Property Access**
There are no residential accesses along Te Irirangi Drive that will be directly affected by the works; however there are a number of businesses located within Botany Town Centre at the east side of Te Irirangi Drive, accessed via Haven Road, that will be affected.

5.14.2 Mitigation Measures

5.14.2.1 *Transportation Network*

80m north and 700msouth of the crossing point are traffic signal intersections with two lane carriageways running in both north and southbound directions and a wide raised median. The intersections are Haven Drive / Te Irirangi Drive to the north and Smales Road / Te Irirangi Drive to the south. During active construction periods the works will require one of the carriageways to be partially closed - thus there will be only a single carriageway available in one direction.

- **Through Traffic**
To compensate for the reduction of lanes suitable diversion routes would be signed as required.
- **Access**
There are a number of residential areas that are currently accessed via the northbound and southbound carriageways of Te Irirangi Drive. There is not a requirement for access to these locations to be maintained as alternative routes of access are available.
- **General**
Additional diversion routes would be provided from all directions, signed at some distance from the road closures to provide drivers with the ability to change their route earlier, in order to avoid the affected roads.

The work can be undertaken in several distinct stages, even so it is expected that the work will take more than the time slot available between the peak hours of a weekday and for this reason it is expected that work will probably be scheduled for weekends.

Once a contractor has been engaged, they will be required to study this junction and review the various options such that the eventual traffic impact is minimised.

At all times during construction the contractor will be expected to comply with the guidelines regarding traffic safety and safe management on the road in accordance with COPTTM.

- **Bus Services**

During active construction periods buses operating on the north-south route 66 will largely be unaffected, however, additional time may be required to be scheduled into the timetable – this will be undertaken in conjunction with the Bus Operator.

5.15 Te Irirangi Drive to Te Koha Road, crossing Haven Drive Intersection.

5.15.1 Description

Ti Irirangi Drive is a straight dual carriageway which is typically approximately 8m wide in both directions and separated by a 10m central median which narrows at intersections to accommodate the flair in the carriageway. There is a wide berm to both sides, typically 6m in width. The central median is planned for future use as a public transport corridor for light rail, tram or similar and is thus not expected to be available for the cable. The route is expected to follow the northbound carriageway. Even if the trench can be accommodated in the berm, construction activities during active and passive construction periods will reduce the northbound carriageway to a single lane. During passive construction periods protection of the trench with steel plates will be impractical given the volume and speed of traffic...

The crossing of Haven Drive can either be undertaken in two discrete packages, closing half the available carriage way at a time and imposing temporary one way working or closing Haven Drive completely and using alternative routes. Diversion routes will be posted to reduce the impact of the partial or full closure and to reduce the turning moves to and from Ti Irirangi Drive.

5.15.2 Assessment of Effects

5.15.2.1 *Transportation Network*

- **Extent of effects**

Disruption due to construction along this location, even with careful management and mitigation measures, could lead to extensive congestion on the northbound carriageway. It is reasonable to expect that the presence of the road works will discourage some through traffic with this traffic diverting to alternative routes of which there will be at least two that are of appropriate size and capacity to take the increased volume.
- **Through traffic**

Capacity of the northbound carriageway of this section of road will be halved. The works will cause disruption and delay to the northbound through traffic, however there are a number of alternative routes available. Congestion from the road works could result in traffic tailing back along Te Irirangi Drive in the southbound direction. It is reasonable to expect that as this constraint will be imposed for a more extended period than elsewhere, throughout both the active and passive construction periods, a proportion of through traffic will re-route. This could lead to a spread of congestion in the local network as traffic flows increase above normal levels onto alternative routes in the adjacent network.
- **Bus Services**

There is one bus service (route 66) using Te Irirangi Drive that will be affected.

- Property Access

There are no residential accesses along Te Irirangi Drive that will be directly affected by the works. Haven Drive Intersection is a key intersection which provides one of the accesses to Botany town centre. However, the works are restricted to the west side of Te Irirangi Drive and should not interfere with access which is located on the east side of Te Irirangi Drive.

5.15.3 Mitigation Measures

5.15.3.1 *Transportation Network*

- Through Traffic

To compensate for the reduction of lanes suitable diversion routes would be signed as required. All existing traffic signal junctions on alternative routes can be monitored and their operation can be optimised to ensure that the traffic flow is maintained.

- Access

There are a residential areas that are currently accessed via the northbound and southbound carriageways of Te Irirangi Drive, these are all to the south of the Haven Drive intersection. There is not a requirement for access to these locations to be maintained as alternative routes of access are available. During active construction periods these accesses will be closed, however, plating over the trench where it crosses access roads will facilitate access during passive construction periods.

- General

Additional diversionary routes would be provided from all directions, signed at some distance from the road closures to provide drivers with the ability to change their route earlier, in order to avoid the affected roads.

Additional resources will be used to accelerate the construction programme through the passive phases and thus and reduce the overall period over which congestion and delay is anticipated along this section.

Once a contractor has been engaged, they will be required to study this junction and review the various options such that the eventual traffic impact is minimised.

At all times during construction the contractor will be expected to comply with the guidelines regarding traffic safety and safe management on the road in accordance with COPTTM.

- Bus Services

During active construction periods buses operating on the north-south route 66 will largely be unaffected, however, additional time may be required to be scheduled into the timetable – this will be undertaken in conjunction with the Bus Operator.

5.16 Te Koha Road to Ti Rakau Drive

5.16.1 Description

The route from Te Irirangi Drive through to Ti Rakau Drive is via the **perimeter of 'The Hub'** commercial/industrial/retail area and the work will not impact significantly on traffic in the area although service access to some business and shops will be affected and will require careful management. However, the trenching works will require construction traffic to utilise the left turn lane from Te Irirangi Drive into Te Koha Road and the southbound lane of Te Koha Road over a distance of approximately 100m. Similarly areas of the service road to the rear of the shops on the southern side of The Hub will be affected. Traffic flows are light but access must be maintained to the VTNZ testing station, the auto businesses and the rear of shops in this area.

5.16.1.1 Transportation Network

- Extent of effects
- Traffic effects are localised and will not spill onto the local network. Access to businesses in this location is important. Liaison will be undertaken with local businesses to minimise the effects on disrupted access
- Through Traffic
Through traffic around the rear of the shops is negligible and there are low levels of through traffic in Te Koha Road
- Bus services
There are no bus services in this area
- Property access
A number of businesses have access either for customers or for service vehicles from the service road. Once a contractor has been engaged, they will be required to study this junction and review the various options such that the eventual traffic impact is minimised.

At all times during construction the contractor will be expected to comply with the guidelines regarding traffic safety and safe management on the road in accordance with COPTTM.

5.16.2 Mitigation Measures

5.16.2.1 Transportation Network

- General
The left-turn from Te Irirangi Drive into Te Koha Road can be temporarily closed during active construction works. Alternative access is available via Te Koha Road from the west. This will have less impact on the local road network than incorporating changes to the traffic signals at the Te Koha Road intersection access to Botany town centre.

Diversion routes would be provided from all directions, signed at some distance from the road closures to provide drivers with the ability to change their route earlier, in order to avoid the affected roads.

At all times during construction the contractor will be expected to comply with the guidelines regarding traffic safety and safe management on the road in accordance with COPTTM

- Property access
The works will ensure that customers and service vehicles at all times provide and facilitate suitable access to the businesses in the area and that these businesses are not inconvenienced. This will normally be undertaken as part of the temporary traffic management plan for the works

5.17 Crossing Ti Rakau Drive

5.17.1 Description

Ti Rakau Drive which is a very busy and often congested regional arterial road, with three lanes in both direction and a raised median. One cable circuit will be trenched and plated across the carriageway. Plates will be installed over the trenches and the trenches reinstated for traffic to over run, final reinstatement will be required at a later date. This work is likely to be undertaken over a number of weekend periods for each carriageway. In turn both the three lane carriageways will be reduced to a single lane as the plating is installed and then the lane closures will be shifted to continue working across the carriageway until each is complete. The traffic management measures will be removed in the mean time so that normal traffic flows can be resumed through the week.

5.17.2 Assessment of Effects

5.17.2.1 *Transportation Network*

- Extent of effects
Disruption due to construction at this location even with careful management and mitigation measures could lead to extensive congestion. This location is critical as there are no convenient or suitable alternative routes in this location and the only suitable diversionary routes are very indirect and lengthy. Ti Rakau Drive is busy seven days a week, every week of the year. Work at this location should be undertaken in off-peak periods only.
- Through traffic
Link capacity at this section of road will be significantly reduced. Suitable alternative routes are not available and congestion from the road works could result in traffic tailing back extensively along Ti Rakau Drive both in the eastbound and west bound direction. This in turn could lead to extensive congestion in the local network around botany town centre. It is essential that works are undertaken in off-peak periods and that the public are warned through various media of the impending works.
- Bus Services
There are two bus service using Ti Rakau Drive that will be disrupted, they are route 65 and 68. There is also a Howick and Eastern bus depot located nearby on Ti Rakau Drive. Liaison will be undertaken with this public transport operator so that he is can adjust the scheduling of his buses so that services are unaffected.

- Property Access
There are no residential accesses along Ti Rakau Drive.

5.17.3 Mitigation Measures

5.17.3.1 *Transportation Network*

- General
Diversion routes would be provided from all directions, signed at some distance from the road closures to provide drivers with the ability to change their route earlier, in order to avoid the affected roads.

The work can be undertaken in several distinct stages, even so it is expected that the work will take more than the time slot available between the peak hours of a weekday and for this reason it is expected that work will probably be scheduled for weekends again avoiding peaks and possibly also night-time working..

At all times during construction the contractor will be expected to comply with the guidelines regarding traffic safety and safe management on the road in accordance with COPTTM.

- Bus Services
During active construction periods buses operating on routes 65 and 68 will largely be unaffected, however, additional time may be required to be scheduled into the timetable – this will be undertaken in conjunction with the Bus Operator.

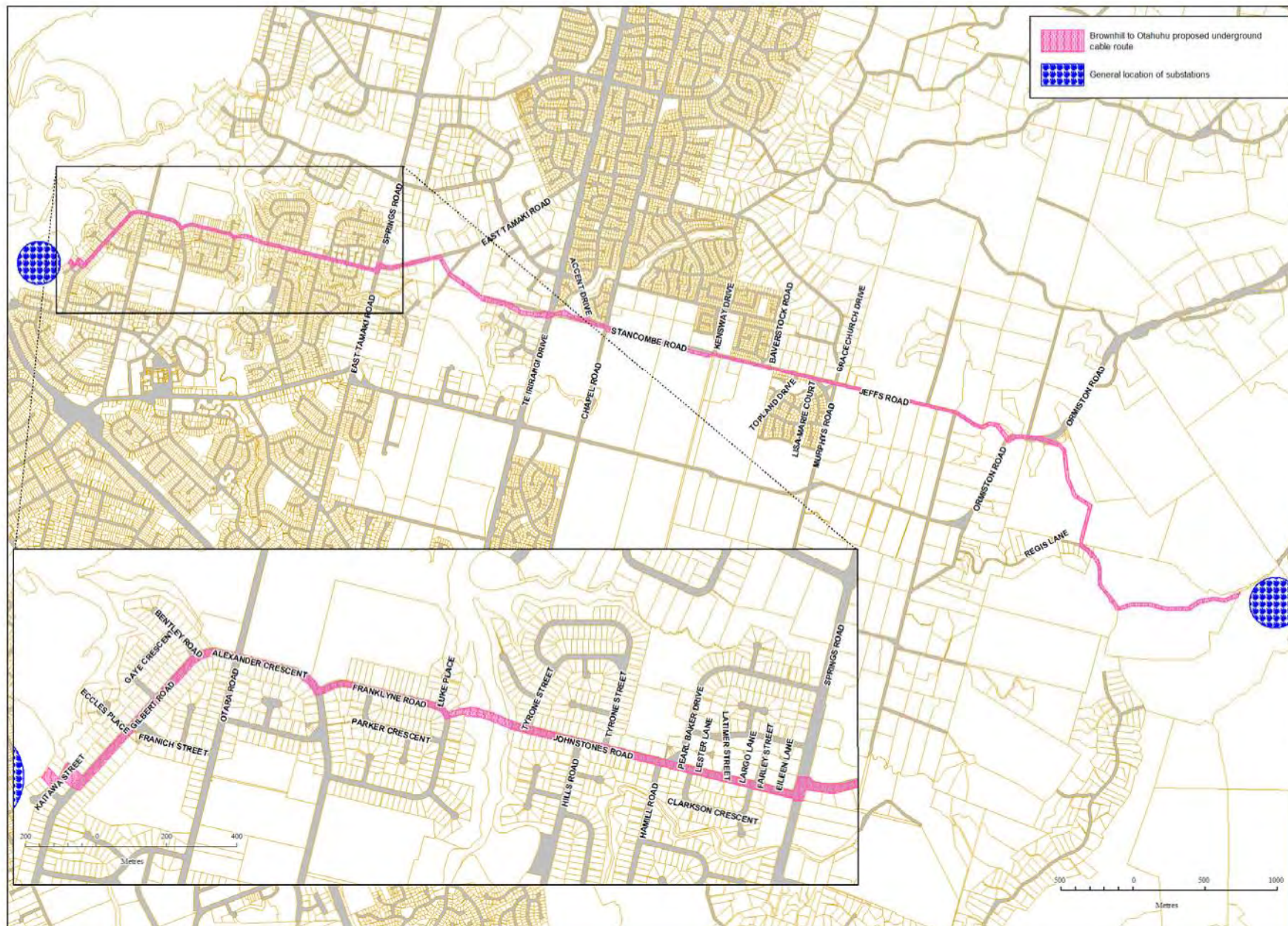
6 Otahuhu Underground Cable Section

6.1 Introduction

The final route selected for the underground cable route between Otahuhu substation and the proposed Brownhill Road substation is the northernmost of three options previously considered by Transpower NZ Ltd and is **referred to as the “Stancombe Road Route Option”**. The route is shown on the map which follows

Information on existing underground services has been used to plan the route and trenching alignment used and to ascertain the carriageway width available / required. The exact location of the existing underground services will not be known until trial holes have been dug which will take place prior to construction, once a contract has been awarded.

The work being undertaken by Transpower on the road network will be similar in nature to work undertaken on a regular basis by other utility companies, such as the installation of a gas main or water supply pipe.



The Stancombe Road Route Option passes through areas which are largely residential in nature although there is a central section which traverses a commercial / industrial area. For easier understanding and for assessment, the Route has been broken down into a number of sections where each section is relatively homogeneous in terms of land use and/or road type and has characteristics that distinguish it from adjacent sections.

The underground cable will be formed of two circuits, which require a separation of 3.5m minimum. This requires two parallel trenches to be excavated. Typically, the construction methodology will involve the excavation of one of the trenches from start to finish before returning to carry out the process again. The excavation process is expected to be linear, progressing from one end of the underground route at the Otahuhu substation to the other at the Brownhill road substation. The trench will be excavated in lengths of up to 600-800m at a time with each section taking about 6-8 weeks. The nature of the construction will at certain times be **'active' with construction activity moving steadily along** the trench line. Active periods are likely to occur at each location three times, once each for excavation, cable-laying and additional trench reinstatement. The active periods for excavation and additional trench reinstatement will last typically for a day whilst the cable laying is expected to last for at least six days. For the rest of the 6-8 week construction period, the construction will be **'passive'** with the trench open awaiting cable-laying and/or reinstatement.

Cable bays will be required at intervals of 600-800m for cable jointing. Active construction periods at these bays could be more prolonged, however, the bays will be at isolated locations and wherever possible the bays will be located outside of carriageways. The bay positions cannot be determined until the cable route is designed in detail. The effects will be highly localised and will have a negligible effect relative to the trenching works.

Following on from the main works will be final trench reinstatement, this has to follow on some time after the main works in order to allow the trench to settle through the running of traffic over it. This is normal practice. The same traffic management process will be in force during this work but the working space and the construction period will be a lot smaller and shorter respectively. The effects from this will be negligible on all but the main intersections where this phase of the works has been highlighted.

During periods of active construction the road width required to accommodate plant, equipment and labour safely will typically be 6m although where space is constrained techniques can be used to reduce this width; the trade-off is that the works will take longer. During passive construction periods a 3m width is required to safely accommodate the open trench.

As active construction progresses along roads, access to individual driveways will become unavailable for short periods, typically for a day. To minimise disruption to residents it is anticipated that they will be kept fully informed of the periods when their access will be interrupted and if necessary alternative secure parking will be made available close to their homes. In the event of an emergency, access to a particular residence will be made available by means of steel plates that will have been aside for such an instance.

During passive construction periods access to driveways will be maintained by laying temporary steel plates over the open trenches, although these steel plates are unlikely to be suitable for heavy traffic. Heavier duty steel plates will be used on the carriageway sections where heavier vehicles will be present and where access over an open trench is required. The laying out of signs and protection at the roadworks will be fully compliant with the COPTTM during active and passive phases of construction.

Pedestrian safety will be ensured at each step of the works. Where construction closes a road or footway an alternative route will be signed, or the footway diverted. Barriers will be used to zone off identified safety

hazards and steel plates will be laid where necessary for pedestrian access. At traffic controlled crossing points, every effort will be made to maintain the level of service for pedestrians.

At all times during construction the contractor will be expected to comply with the guidelines regarding traffic safety and safe management on the road in accordance with COPTTM.

6.2 Gilbert Road – Between Kaitawa Street and Franklyne Road

6.2.1 Description

The carriageway of Gilbert Road is typically approximately 10m wide. During active construction periods the works will require a 6m width - thus there will be 4m of carriageway available for vehicles to pass the works and stop/go controls will be sufficient to accommodate traffic. During passive construction periods the works will require a 3m width of carriageway with 7m width being available. This width will be sufficient to accommodate two way traffic flows.

The sections along Gilbert Street and Franklyne Road will be completed using two stages – with the first circuit being installed on one side of the road, then the second circuit being installed on the other side of the road.

6.2.2 Assessment of Effects

6.2.2.1 *Transportation Network*

- Extent of effects

The effects of work in Gilbert Road are expected to be local and will not be transferred to the arterial road network. Although there are schools and the Manukau Institute of Technology in the vicinity traffic to these locations can use alternative routes to avoid the works.

- Through Traffic:

Due to the residential nature of the area, the vast majority of traffic in Gilbert Road is local traffic; and through traffic is minimal.

- Bus Services:

The 497 bus route serves Gilbert Road. There are bus stops along both Gilbert Road and Franklyne Road.

6.2.2.2 *Property Access*

All roads will remain accessible except the cul-de-sacs as identified below, although at some locations temporary traffic control will be required.

- Kaitawa Place

During active construction periods, access to and from Kaitawa Place will be temporarily unavailable. During passive construction periods, access will be restricted to a single lane.

- Gilbert Road

At the Kaitawa Place junction, Gilbert Road will be temporarily closed during active construction periods, however, alternative access is available in both directions. The trench will pass two shops (dairies) in Gilbert Road, however, as they each have two accesses, retail activities should not be hindered. Provisions for temporary access arrangements during active construction periods will include measures for service vehicles.

- Eccles Place

During active construction periods, access to Eccles Place will be closed temporarily.

- Gaye Crescent and Bentley Road

Access to Gaye Crescent and Bentley Road will suffer minimal disruption as there are two alternative access routes (through Gilbert Road and Bentley Road).

- The junction of Otara Road with Gilbert Road

This will experience only minor disruption as alternative access will be possible via Otara Road, Franich Street and Clyde Road.

- Franich Street

Access will suffer minimal disruption as alternative access will be possible via Otara Road.

6.2.3 Mitigation Measures

6.2.3.1 *Transportation Network*

- Through Traffic:

- Local deviations via adjacent roads will facilitate diversionary routes whilst some intersections are temporarily closed during active construction periods.
- Plating over the trench will facilitate access during passive construction periods.
- At all times during construction the contractor will be expected to comply with the guidelines regarding traffic safety and safe management on the road in accordance with COPTTM.

- Bus Services

- Plating over the trench will facilitate access during passive construction periods to accommodate traffic including the bus route.
- During both active and passive construction periods some bus stops and short sections of route 497 will need temporary local re-routing – this will be undertaken in conjunction with the Bus Operator.

6.2.3.2 *Property Access*

- General

- Work will be scheduled to minimise disruption during active construction periods.
- Liaison will be undertaken with local residents to minimise the effects on disrupted access
- At some locations temporary traffic control will be required and stop/go controls or temporary traffic signals will be sufficient to accommodate traffic.
- Plating over trenches will facilitate access during passive construction periods.
- Local deviations via adjacent roads will facilitate diversionary routes.

- At all times during construction the contractor will be expected to comply with the guidelines regarding traffic safety and safe management on the road in accordance COPTTM.

- Gilbert Road

The trench will pass two shops (dairies) in Gilbert Road, however, as they each have two accesses, retail activities should not be hindered. Provisions for temporary access arrangements during active construction periods will include measures for service vehicles.

6.3 Franklyne Road – Between Gilbert Road and Otara Creek Reserve

6.3.1 Description

Franklyne Road is typically slightly in excess of 7m wide with 1.6 m wide footpaths on each side. During active construction periods the works will require 6m width - thus there will be only 1m of carriageway available for vehicles to pass the works. However, as an alternative route is available via Franklyne Crescent (which is a loop road) access will not be prevented. During passive construction periods the works will require a 3m width of carriageway with only 4m width being available to accommodate two way traffic flows. So whilst access will be feasible to homes during this period, traffic management measures such as temporary one-way working will be necessary.

6.3.2 Assessment of Effects

6.3.2.1 *Transportation Network*

- Extent of effects

The traffic effects will be very local.

The works will pass through the Sir Edmund Hillary College pick-up/ drop off zone. This pick-up/drop-off facility will not be available during construction.

- Through traffic

No significant through traffic is expected. All roads will remain accessible except the cul-de-sacs as identified below although at some locations temporary traffic control will be required. Local deviations via adjacent roads will facilitate diversionary routes whilst some intersections are temporarily closed.

- Bus services

No bus services will be directly affected

6.3.2.2 *Property Access*

- Luke Place

During active construction periods access to Luke Place will be closed temporarily

- Franklyne Road

Franklyne Road will be temporarily closed during active construction periods, however, alternative access is available in both directions.

- Alexander Crescent

The junction of Alexander Crescent and Franklyne Road will experience only minor disruption, as alternative access will be possible via Otara Road and Clyde Road.

- Parker Crescent

Access to Parker Crescent will experience minimal disruption as there are two alternative access routes, through Franklyne Road.

6.3.3 Mitigation Measures

6.3.3.1 *Transportation Network*

- Through Traffic:
 - Local deviations via adjacent roads will facilitate diversionary routes whilst some intersections are temporarily closed during active construction periods.
 - Plating over the trench will facilitate access during passive construction periods.
 - At all times during construction the contractor will be expected to comply with the guidelines regarding traffic safety and safe management on the road in accordance with COPTTM.

6.3.3.2 *Property Access*

- General
 - Work will be scheduled to minimise disruption during active construction periods
 - Liaison will be undertaken with local residents to minimise the effects on disrupted access
 - At some locations temporary traffic control will be required and stop/go controls or temporary traffic signals will be sufficient to accommodate traffic.
 - Plating over trenches will facilitate access during passive construction periods.
 - Local deviations via adjacent roads will facilitate diversionary routes.
 - At all times during construction the contractor will be expected to comply with the guidelines regarding traffic safety and safe management on the road in accordance with COPTTM.

6.4 Otara Creek Reserve

6.4.1 Description

Impact on traffic will be imperceptible with only the movements of construction vehicles.

6.5 Johnstones Road – Between Otara Creek Reserve and East Tamaki Road

6.5.1 Description

Johnstones Road is straight and its carriageway is typically approximately 8.5m wide. During active construction periods the works will require 6m width - thus there will be 2.5m of carriageway available for vehicles to pass the works and stop/go controls will be sufficient to accommodate traffic. During passive construction periods the works will require a 3m width of carriageway with 5.5m width being available for general traffic which will be sufficient to accommodate two way traffic flows.

There is an existing gas main running down one side of Johnstones Road, which limits the available road space for the new underground cable. The exact location will be determined by trial holes, however it is still anticipated that there is available carriageway width in which both trenches can be accommodated and two way traffic flow maintained during passive construction periods.

6.5.2 Assessment of Effects

6.5.2.1 *Transportation Network*

- Extent of effects

It is reasonable to expect that the presence of the roadworks will discourage some through traffic and rat-runners. This traffic will divert to alternative routes. A limited amount of increased congestion can be expected on East Tamaki Road whilst active construction is underway, however, this will be short-lived. Congestion from the roadworks could result in traffic tailing back into Springs Road and East Tamaki Road leading to more widespread disruption on the Springs Road / East Tamaki Road arterial route. It is important, therefore, that disruption should be minimised in this particular section.

- Through traffic

Johnstones Road provides for some degree of through traffic as it links a number of residential roads to Springs Road and East Tamaki Road and there is also possibly an element of rat-running traffic avoiding the traffic signals at the busy East Tamaki Road / Preston Road intersection. This emphasises the potential disruptive effects that could arise in this particular location. The construction works are likely to delay the through traffic to a limited extent however there are a number of alternative routes for traffic.

- Bus services

Together with Hills Road, Johnstones Road forms part of a core bus route used by a number of services (363, 364, 374, 375, 446, 447, and 487). There are bus stops in Johnstones Road.

6.5.2.2 *Property Access*

- Tyrone Street

The junctions of Tyrone Place with Johnstones Road will be affected. Tyrone Street is a loop road which also gives access to Antrim Crescent, Perth Place and Angus Place. Tyrone Street will suffer minimal disruption as there are two alternative access routes.

- Hamill Road

The junction of Hamill Road with Johnstones Road will experience minor disruption, as alternative access will be possible.

- Pearl Baker Drive

Access to Pearl Baker Drive will suffer minimal disruption, as there is an alternative access.

- Latimer Street and Farley Street

Latimer Street and Farley Street access will suffer minimal disruption, as there are several alternative access routes

- Lester Lane, Largo Place and Eileen Place

During active construction periods access to Lester Lane, Largo Place and Eileen Place will be closed temporarily.

- Clarkson Crescent

Access to Clarkson Crescent (and Tate Close) will suffer minimal disruption as Clarkson Crescent is a loop road.

- Private driveways

There are a significant number of private driveways along Johnstones Road which will have to be closed during active construction.

6.5.3 Mitigation Measures

6.5.3.1 *Transportation Network*

- Through traffic

- A set of diversionary routes and information signage will be prepared to accommodate the works in Johnstones Road.
- Local detours via adjacent roads will facilitate diversionary routes whilst some intersections are temporarily closed during active construction periods.
- Plating over the trench will facilitate access during passive construction periods.
- At all times during construction the contractor will be expected to comply with the guidelines regarding traffic safety and safe management on the road in accordance COPTTM.
- If necessary the grass verge area could also be metalled temporarily to further facilitate the temporary passage of traffic.

- Bus services

- Plating over the trench will facilitate access during passive construction periods to accommodate traffic including the bus route.
- During both active and passive construction periods some bus stops and short sections of route 497 will need temporary local re-routing and measures to provide alternative bus routes – this will be undertaken in conjunction with the Bus Operator.

6.5.3.2 Property Access

- General
 - Work will be scheduled to minimise disruption during active construction periods.
 - Liaison will be undertaken with local residents to minimise the effects on disrupted access
 - At some locations temporary traffic control will be required and stop/go controls or temporary traffic signals will be sufficient to accommodate traffic
 - Plating over trenches will facilitate access during passive construction periods.
 - Local detours via adjacent roads will facilitate diversionary routes
 - At all times during construction the contractor will be expected to comply with the guidelines regarding traffic safety and safe management on the road in accordance with COPTTM.
 - If necessary the grass verge area could also be metalled temporarily to further facilitate the temporary passage of traffic.

- Tyrone Street

Tyrone Street will suffer minimal disruption as there are two alternative access routes and works will be scheduled to ensure that one will always be open. Plating over trenches will facilitate access during passive construction periods.

- Hamill Road

Alternative access will be possible via Hills Road.

- Pearl Baker Drive

There is an alternative access route via Springs Road.

- Latimer Street and Farley Street

Latimer Street and Farley Street access will suffer minimal disruption as there are several alternative access routes via Springs Road/Pearl Baker Drive and Valder Avenue.

- Lester Lane, Largo Place and Eileen Place

During active construction periods access to Lester Lane, Largo Place and Eileen Place will be closed temporarily and work will be scheduled to minimise disruption during these periods.

- Clarkson Crescent

Clarkson Crescent is a loop road. There is an alternative access route and works will be scheduled to ensure that one will always be open.

- Private driveways

There are a significant number of private driveways along Johnstones Road which will have to be closed during active construction. They will require the temporary use of plates during passive construction. Due to the number of private residents who will be affected particular attention will be paid to programming and liaison to ensure that residents are well-informed and not disadvantaged.

6.6 Springs Road Intersection with East Tamaki Road and Johnstones Road

6.6.1 Description

The Springs Road / East Tamaki Road / Johnstones Road signalised 4-arm intersection is the location on the underground cable route with the greatest potential for traffic impacts. This is due to the;

- staggered configuration of the intersection
- (111) emergency access at the fire station
- current high traffic flows on all arms
- pedestrian crossing point on a key north-south arterial

Ideally it would be desirable to cross this particular location without trenching, using some form of pipe-jacking or bored ducts. There are constraints however that currently make this unfeasible, as a result it has been necessary to investigate alternative options to cross the road, and it has been identified that open trench work will provide the most technically feasible option. Springs Road Intersection is a main intersection on the north south arterial route through this area, with two lane carriageways running in both northbound and southbound directions and a wide painted median or right turn lane. During active construction periods the works will require one of the carriageways to be closed and restrictions or closures put in place on both of the side arms.

6.6.2 Assessment of Effects

6.6.2.1 *Transportation Network*

- Extent of effects

It is reasonable to expect that the presence of the roadworks will discourage some through traffic, which is likely to divert to alternative routes of which there will be at least three that are of appropriate size and capacity to take the increased volume.

Springs Road intersection forms a crossroads and affords access to two distinct movements, north south and east west, both of which are considered as through movements. It is important, therefore, that during the active construction period, which could last between three to four days, disruption should be minimised to all traffic in this particular section.

- Through traffic : north - south

By far the greatest movement at the intersection is that of north south, Springs Road and East Tamaki Road which convey a large volume of through traffic, fairly evenly split between northbound and southbound movements. With one carriageway closed the construction works will cause some disruption to this through traffic, however there are a number of alternative routes available as mitigation measures. Potential congestion from the roadworks could result in traffic tailing back along Springs Road and East Tamaki Road leading to more widespread disruption on the Springs Road / East Tamaki Road arterial route.

However the East Tamaki relief road currently under construction will have been completed by the time the works take place, which will contribute significantly to reduce the volumes on this north south arterial route.

- Through traffic : east - west

Without mitigation measures, increased congestion could also be expected on East Tamaki Road and Johnstones Road at the point of closure or restriction, whilst active construction is underway. Congestion from

the roadworks could result in additional congestion and traffic tailing back along, Johnstones Road, Hills Road, Pearl Baker Drive and possibly Valder Avenue and also East Tamaki Road and Lady Ruby Drive.

- Emergency Services

Without proper planning routes from the fire station could be compromised.

- Bus Services

There are a number of bus services using the Springs Road intersection that will be disrupted.

6.6.2.2 Property Access

There are no property accesses along Springs Road that will be directly affected by the works.

6.6.3 Mitigation Measures

6.6.3.1 Transportation Network

- Proposal

During active construction periods the works will require one of the carriageways to be closed, which will reduce the roadway to a two-lane carriageway which will be used for two way operation. East Tamaki Road and Johnstones Road can be closed at their junctions with Springs Road, with detours signed. This will enable Springs Road to continue to operate without the need for temporary traffic signals or stop/go controls accommodating traffic. To achieve this the existing signals could be switched off, but in order to cater for pedestrian movements at the intersection, changes to the signals software could be undertaken and the signals left on. This would enable the north and south movement or a pedestrian phase to run. Some changes to the software via a handset or a laptop would be required. Permission from the controlling authority will be required in order to make these changes.

Work on both trenches may be undertaken simultaneously or concurrently on the closed section of the carriageway, with a contraflow traffic system operating on the open section. Trench work can start at the central median and proceed to either Johnstones Road junction or the East Tamaki Road junction, curving to ensure that the minimum cable bending radii are not compromised. Trench work can continue as far down the side roads as is necessary to avoid further closures at the intersection. Plates will be installed over the trenches as a temporary reinstatement carried out for traffic to over run, allowing for the trenches on each carriageway to be reinstated at a later date. The contraflow will then be transferred to the opposite carriageway to facilitate the trenching operation to recommence.

- Through traffic : north - south

It will probably be desirable to close both East Tamaki Road and Johnstones Road at, or close to, the Springs Road intersection and to provide suitable diversion routes in order to maintain capacity at the intersection. This will allow for continuous northbound and southbound flows, thereby compensating for the reduction of lanes. This will ensure that the works have as minimal impact on this route as is possible.

- Through Traffic : east - west

A temporary diversionary route via Lady Ruby Drive and Springs Road can be provided to alleviate the East Tamaki Road closure. This would make use of existing traffic signal intersections, operation of which can be monitored to optimise traffic flow.

A temporary diversionary route via Hills Road can be provided to alleviate the Johnstones Road closure for all traffic wishing to enter or exit the Mayfield Park area. This makes use of an existing traffic signal intersection, operation of which can be monitored to optimise traffic flow. Pearl Baker Drive can be maintained for northbound traffic to access the Mayfield Park area, although this will not be signed as the main route. Pearl Baker Drive can be used as an additional northbound exit route, although traffic will not be able to turn right at the Springs Road intersection.

- General

Additional diversion routes would be signed at some distance from the road closures to provide drivers with the ability to change their route earlier, in order to avoid the affected roads.

The work can be easily broken down into two distinct sections, (two circuits). Even so it is expected that the work will take more than the time slot available between the peak hours of a weekday. For this reason work will probably be scheduled for weekends thus avoiding the peak weekday traffic flows on these routes.

Once a contractor has been engaged, they will be required to study this intersection and review the various options such that the eventual traffic impact is minimised, and ensure through consultation with MCC that the least impact options have been adopted.

At all times during construction the contractor will be expected to comply with the guidelines regarding traffic safety and safe management on the road in accordance with COPTTM.

- Bus Services

During active construction periods buses operating on the north-south corridor will largely be unaffected, however, some bus stops and short sections of routes particular in Johnstones Road will need temporary local re-routing and measures to provide alternative bus routes – this will be undertaken in conjunction with the Bus Operator.

- Emergency Services

By planning and co-ordinating the works in this vicinity with the emergency services it will be possible to ensure that access for both of the emergency services at the Fire Station will be maintained at all times and for all routes from the Fire Station.

6.7 East Tamaki Road – Between Springs Road Intersection and Drainage Reserve

6.7.1 Description

East Tamaki Road leading eastwards from the intersection is more than 12m wide. During active construction periods the works will require 6m width - thus there will be at least 6m of carriageway available for vehicles to pass facilitating two-way working without the need for temporary traffic signals or stop/go controls to accommodate traffic.

6.7.2 Assessment of Effects

6.7.2.1 *Transportation Network*

- Through Traffic

East Tamaki Road carries significant flows of mainly through traffic. However, the existing width is sufficient to accommodate the active works with two-way traffic flows and with minimal reduction in capacity.

At the point where the cable route diverges from East Tamaki Road into the drainage reserve a trench will be excavated across the full width of the road requiring temporary closure for the duration of active works.

- Bus Services

There are no bus services in East Tamaki Road

6.7.2.2 *Property Access*

There are several accesses to industrial and commercial properties along East Tamaki Road, which in addition to access for light vehicles will require continuous unbroken access for heavy commercial vehicles.

Access to the church in East Tamaki Road will need to be available on weekends.

6.7.3 Mitigation Measures

6.7.3.1 *Transportation Network*

- Through Traffic

- A temporary diversionary route via Lady Ruby Drive and Springs Road will overcome any temporary, limited-duration disruptions at the point where the cable route diverges from East Tamaki Road into the drainage reserve.
- Plating over the trench will facilitate access during passive construction periods.
- At all times during construction the contractor will be expected to comply with the guidelines regarding traffic safety and safe management on the road in accordance with COPTTM.

6.7.3.2 *Property Access*

- General

- Work will be scheduled during active construction periods to minimise disruption.
- Liaison will be undertaken with local businesses to minimise the effects on disrupted access
- Plating over trenches will facilitate access during passive construction periods.
- At all times during construction the contractor will be expected to comply with the guidelines regarding traffic safety and safe management on the road in accordance with COPTTM.

- Industrial and commercial accesses

Where it is necessary to undertake active works across industrial and commercial accesses work will be carried out at weekends only or, depending on the operational nature of individual businesses, at night times (night time disturbance is more acceptable in non-residential areas).

- Church access

In the case of access to the church weekday working only will be required.

6.8 Te Irirangi Drive Crossing

6.8.1 Description

The section between East Tamaki Road and Te Irirangi Drive is off-road, in the drainage reserve except for the locations where the cable route crosses Te Irirangi Drive which is a Regional Arterial road, dual carriageway with high north-south flows.

Te Irirangi Drive is built on an embankment where it crosses the proposed line of the cable trench. The trench will be of a consistent depth along this section, elevating to follow the contour of the embankment as it crosses the carriageway.

It is expected that both cable circuits will be trenched and plated simultaneously across each carriageway i.e. in a two-stage process. Plates will be installed over the trenches and the trenches reinstated at a later date. This work is likely to be undertaken over two weekends, with the traffic management measures removed in the mean time.

6.8.2 Assessment of Effects

6.8.2.1 *Transportation Network*

- Extent of effects

Disruption due to construction at this location without careful management and mitigation measures could lead to extensive congestion. It is reasonable to expect that the presence of the roadworks will discourage some through traffic although this traffic will divert to alternative routes of which there will be at least two that are of appropriate size and capacity to take the increased volume.

- Through traffic

At any one time during active construction the carriageway in one direction at this section of road will be closed, causing severe disruption to through traffic, however there are a number of alternative routes available. Even so without any mitigation measures, and relying solely on existing unsigned diversion routes, congestion from the roadworks will result in traffic tailing back along Te Irirangi Drive both in the northbound and southbound direction.

The East Tamaki connector currently under construction will have been completed by the time the works take place and this will contribute significantly to relieving pressure on this north south arterial route.

- Emergency Services

A planned co-ordinated management of the works as a whole will ensure that access for the emergency services will be maintained at all times on all routes. Prior notification of the works will ensure that the emergency services are able to select routes that are the most appropriate and congestion free.

- Bus Services

There is one bus service using Te Irirangi Drive that will be disrupted (route 66).

- **Property Access**

There are no residential accesses along Te Irirangi Drive that will be directly affected by the works, however there are a number of business at the west side of Te Irirangi Drive and the Sancta Maria College on the east side that will be affected.

6.8.3 Mitigation Measures

6.8.3.1 *Transportation Network*

Both north and south of the crossing point are traffic signal intersections with two lane carriageways running in both north and southbound directions and a wide raised median. The intersections are Accent Drive / Te Irirangi Drive to the north and Bishop Dunn Place / Te Irirangi Drive to the south. During active construction periods the works will require one of the carriageways to be closed - thus there will be only a single two-lane carriageway available for two-way operation. Contraflow on the open carriageway will allow the road to continue to operate without the need for temporary traffic signals or stop/go controls at the point of the trench crossing. However, to achieve this the road layout at the existing signalled intersections either side of the trench crossing will need to be temporarily amended and four way signals installed to accommodate the contraflow. The contraflow would reduce the number of approach lanes for both north and south bound through traffic to a single lane, some minor movements may be banned during the period of the contraflow, and alternative routes for these will require signing.

- **Through Traffic**

It may prove desirable to limit some of the movements at the two traffic signal intersections either side of the crossing point in order to re-proportion green time and to maintain as continuous as possible north and southbound flow, to compensate for the reduction of lanes. Suitable diversion routes would be signed as required.

All existing traffic signal intersections on alternative routes can be monitored and their operation can be optimised to ensure that the traffic flow is maintained.

- **Access**

The Retail Park and DIY superstore (Mitre 10) are currently accessed via the northbound carriageway of Te Irirangi Drive. The requirement for access to these locations is essential and the contraflow arrangements will be designed so that access will not be jeopardised.

As the contraflow arrangements will be scheduled for weekend working, access to the Sancta Maria College is not critical although the college will be consulted to ensure that access, albeit at a reduced standard, will be available at all times.

- **General**

Additional diversion routes would be provided from all directions, signed at some distance from the road closures to provide drivers with the ability to change their route earlier, in order to avoid the affected roads.

The work can be undertaken in two distinct stages, even so it is expected that the work will take more than the time slot available between the peak hours of a weekday and for this reason it is expected that work will probably be scheduled for weekends.

Once a contractor has been engaged, they will be required to study this intersection and review the various options such that the eventual traffic impact is minimised, and ensure through consultation with MCC that the least impact options have been adopted.

At all times during construction the contractor will be expected to comply with the guidelines regarding traffic safety and safe management on the road in accordance with COPTTM.

- Bus Services

During active construction periods buses operating on the north-south route 66 will largely be unaffected, however, additional time may be required to be scheduled into the timetable – this will be undertaken in conjunction with the Bus Operator.

6.9 Accent Road and Chapel Road Crossing

6.9.1 Description

The Chapel Road / Accent Drive / Stancombe Road signalised 4-arm intersection is one of the locations on the underground cable route with potential for significant traffic impact.

Chapel Road / Stancombe Road intersection is on the north - south District Arterial route through this area, with two lane carriageways running to the north of the intersection, and single lane carriageway to the south although this will be subject to upgrading in the near future. At the intersection the lanes flare over a length of some 100m adding additional capacity. During active construction periods there are two options available: closing the intersection to all movements or installation of temporary four way signals. These options are discussed below.

- Close the intersection to all movements

Chapel Road intersection forms a crossroads allowing all movements. The north south movement consists mainly of through traffic. The east west movement is lighter.

It is reasonable to expect that the presence of the roadworks will discourage the majority of the through traffic and such traffic will divert to alternative routes of which there are at least two routes of appropriate size and capacity to take the increased volume for both north – south and east – west movements.

- Install temporary 4 way traffic signals.

The works will require some of the lanes to be closed off, to allow a contraflow to operate and possibly some movements banned. The existing signals will require switching off and temporary four way signals erected. Pedestrian movements could be catered for within the traffic stages.

Due to the limited road space available, work would have to proceed on each trench separately thereby extending the time that the intersection will be under temporary control.

The work could be broken down into seven elements, although more than one may run concurrently;

- crossing Accent Drive northbound carriageway
- crossing Accent Drive southbound carriageway

- off carriageway along the north side of Accent Drive
- the approach from the west along Accent Drive,
- crossing the west side of the intersection,
- crossing the east side of the intersection,
- and trenching into the scrub land on the south-eastern corner of the intersection.

Plates would be installed over the trenches across carriageways and at the intersection and the trenches back-filled at a later date.

6.9.2 Assessment of Effects

6.9.2.1 *Transportation Network*

- Extent of effects

Option One: Close the intersection to all movements

- Without mitigation measures there would be potential for congestion, which could block back to the alternative routes hence reducing the capacity of these.
- Access to properties would be limited along certain approach routes.
- There is one bus service, route 444, that uses the Chapel Road intersection that would be disrupted and will require a diversion.
- A planned co-ordinated management of the works in this vicinity would be necessary ensure that access for the emergency services will be maintained at all times on all routes.

Option Two: Four way signals

- Due to the reduction of lanes and losses due to running each approach separately to remove conflicting movements, four way signals would significantly reduce the capacity of the signals. Also the works would take longer due to the number of sections that the work would have to be broken down into, lengthening the period over which the works will have to take place.
- Access to properties would not be affected
- There is one bus service, route 444, that uses the Chapel Road intersection, which could suffer delays but could be maintained albeit with some rescheduling to allow for delays.
- A planned co-ordinated management of the works in this vicinity would be necessary to ensure that access for the emergency services would be maintained at all times on all routes.

6.9.3 Mitigation Measures

6.9.3.1 *Transportation Network*

Option One: Close the intersection to all movements

Advanced notification and adequate signage would be deployed to divert traffic away from the works with suggested diversion routes being:

- From the South
Chapel Road closed at Ormiston Road, except for access.

Diversion for North and West bound traffic, turn left onto Ormiston Road at the intersection with Chapel Road.

Diversion for East bound traffic, turn right onto the upgraded Ormiston Road at the intersection with Chapel Road.

- From the North
Chapel Road closed at Gracechurch Drive, except for access.
Diversion for South and West bound traffic, turn right onto Smales Road at the traffic signals with Chapel Road.

Diversion for Eastbound traffic, turn left onto Gracechurch Drive at the junction with Chapel Road, although it may be possible to still allow the left turn at Stancombe Road.

- From the East
Stancombe Road closed at junction with Gracechurch Drive, except for access.
Diversion via **either Gracechurch Drive or Murphy's Road**

- From the West
Accent Drive would be closed at Te Irirangi Drive except for access.
Diversion for North bound traffic, continue straight on to signals and turn right onto Smales Road at the traffic signals with Te Irirangi Drive.
Diversion for South bound traffic, straight on to signals at Ormiston and then turns left to the Chapel Road roundabout.

Access to properties would be maintained at all times past the road closures and information would be provided to residents as to the extent of the road closures.

- There is one bus service, route 444 that uses the Chapel Road intersection. During active construction periods this bus would require a diversion route – this would be undertaken in conjunction with the Bus Operator.

Option Two: Four way signals

- Due to the reduction of lanes and the loss of movements that would be able to run together, four way signals would significantly reduce the capacity of the intersection although some movement could be temporarily prohibited. These prohibited routes would require signage as detailed in the section above.

- Diversions would need to be signed at some distance offering acceptable alternative routes to reduce the through traffic.
- During active construction periods buses operating on the north-south route 444 will largely be unaffected, however, additional time may be required to be scheduled into the timetable – this would be undertaken in conjunction with the Bus Operator.

6.9.3.2 General

Signs indicating diversion routes would be installed further from the road closures than the intended diversion route to provide drivers with the ability to change their route earlier, in order to avoid all the affected roads.

While the work could be easily broken down into distinct sections, it is still expected that the work will take more than the time slot available between the peak hours of a weekday. For this reason, work is proposed to be scheduled to take place over several weekends.

Once a contractor has been engaged, they will be required to study this intersection and review the various options such that the eventual traffic impact is minimised, and ensure through consultation with MCC that the least impact options have been adopted.

At all times during construction the contractor would be expected to comply with the guidelines regarding traffic safety and safe management on the road in accordance with COPTTM.

6.10 Stancombe Road – From Chapel Road to Jeffs Road

6.10.1 Description

Stancombe Road is a District Arterial road with a specified minimum carriageway width of 16m. From the Chapel Road intersection to a point a short distance down Stancombe Road the trenches will be to the south of the carriageway, in the berm and off carriageway parking. Where the trenches rejoin the carriageway the works will require a 6m wide path - thus there will be 10m of carriageway available for vehicles to pass the works. During passive construction periods the works will require a 3m width of carriageway with 13m width being available which will be sufficient to accommodate two-way traffic flows.

6.10.2 Assessment of Effects

6.10.2.1 Transportation Network

- Extent of effects

Traffic effects are expected to be of a local nature due to the availability of alternative arterial routes and also due to the width of carriageway available for construction. It is anticipated that the parking in the street will have to be temporarily restricted.

- Through traffic

Stancombe Road is one of three east-west arterials in Flatbush. At present, even though only two of these arterials are available (as Ormiston Road is closed for upgrading to Regional Arterial standard) there is plenty of

spare capacity in the network. When the cabling work is carried out it is expected that all three arterial roads will be available to traffic. So, notwithstanding traffic flow increases that will arise due to the continuing development and growth of Flatbush, it is reasonable to expect that the works will result in only a minor reduction in capacity for through traffic.

- Bus services

There are no bus services in Stancombe Road

6.10.2.2 *Property Access*

There are currently a number of side roads and driveway accesses. These are likely to increase in number as development of the Flatbush area continues. The side roads will however suffer minimal disruption, as alternative access routes are available.

6.10.3 Mitigation Measures

6.10.3.1 *Transportation Network*

- Through traffic
- Local detours via adjacent roads will facilitate diversionary routes whilst some intersections are temporarily closed during active construction periods.
- Plating over the trench will facilitate access during passive construction periods.
- At all times during construction the contractor will be expected to comply with the guidelines regarding traffic safety and safe management on the road in accordance COPTTM.

6.10.3.2 *Property Access*

- General
- Work will be scheduled to minimise disruption during active construction periods.
- Liaison will be undertaken with local residents to minimise the effects on disrupted access.
- At some locations temporary traffic control will be required and stop/go controls or temporary traffic signals will be sufficient to accommodate traffic.
- Plating over trenches will facilitate access during passive construction periods.
- Local detours via adjacent roads will facilitate diversionary routes.
- At all times during construction the contractor will be expected to comply with the guidelines regarding traffic safety and safe management on the road in accordance with COPTTM.

- Parking at the Buddhist Temple in Chapel Road

The loss of parking in Stancombe Road could cause temporary inconvenience to worshippers at the Buddhist Temple during active and passive construction periods. Alternative temporary parking arrangements may need to be provided.

6.11 Jeffs Road – From Stancombe Road to Ormiston Road

6.11.1 Description

Jeffs Road, a residential collector-distributor road, has recently been constructed in conjunction with a residential housing development. The carriageway of Jeffs Road is more than 10.5m wide and has several intersections with other residential roads. There will be sufficient width allowing for a 6m wide active construction strip to accommodate two-way traffic during construction.

6.11.2 Assessment of Effects

6.11.2.1 *Transportation Network*

- Extent of effects

The effects of work in Jeffs Road are expected to be local and will not be transferred to the arterial road network.

- Through traffic

Due to the residential nature of the area, the majority of the traffic in Jeffs Road will be local traffic.

- Bus services

There are no bus services in Jeffs Road.

6.11.2.2 *Property Access*

Construction at the junction of Jeffs Road, Gracechurch Drive and Stancombe Road can be expected to cause some disruption. Temporary traffic control, in the form of temporary traffic signals will probably be needed. Some delays can be expected at this point during active construction although access will be maintained

By the time construction commences the residential development at Jeffs Road will be substantial, however, as the road width will be sufficient to accommodate active construction and two-way traffic the effects on traffic will be minor.

6.11.3 Mitigation Measures

6.11.3.1 *Transportation Network*

All roads will remain accessible and local deviations via adjacent roads will facilitate diversionary routes whilst some intersections are temporarily closed as a result of active construction.

- Through traffic
 - Diversionary routes and information signage will be prepared to accommodate the works in Jeffs Road.
 - Local detours via adjacent roads will facilitate diversionary routes whilst some intersections are temporarily disrupted during active construction periods.
 - Plating over the trench will facilitate access during passive construction periods.
 - At all times during construction the contractor will be expected to comply with the guidelines regarding traffic safety and safe management on the road in accordance COPTTM.

6.11.3.2 *Property Access*

- General
- Work will be scheduled to minimise disruption during active construction periods.
- Liaison will be undertaken with local residents to minimise the effects on disrupted access.
- At some locations temporary traffic control will be required and stop/go controls or temporary traffic signals will be sufficient to accommodate traffic.
- Plating over trenches will facilitate access during passive construction periods.
- At all times during construction the contractor will be expected to comply with the guidelines regarding traffic safety and safe management on the road in accordance with COPTTM.

6.12 Ormiston Road

6.12.1 Description

Ormiston Road is a 12.5m wide kerbed Regional Arterial road of a rural nature. There will be adequate space for two-way traffic to be facilitated without the need for traffic control except at the point where the cable trenches cross the road.

6.12.2 Assessment of Effects

6.12.2.1 *Transportation Network*

- Extent of effects
Traffic effects are unlikely to be significant and will be localised.

- Through traffic
Ormiston Road is a link from the urbanising Flatbush suburb of Manukau City through to the rural areas of Whitford and beyond to Beachlands and Maraetai. Almost all the traffic on this section of Ormiston Road is through traffic. However, as development is constrained in the rural areas, traffic is not expected to grow excessively. Through traffic is not expected to be significantly affected.

- Bus services
There are no bus services in Ormiston Road

6.12.2.2 *Property Access*

There are a small number of private driveways along Ormiston Road which will have to be closed during active construction.

6.12.3 Mitigation Measures

6.12.3.1 *Transportation Network*

- Through traffic
- Plating over the trench will facilitate access during passive construction periods.
- At all times during construction the contractor will be expected to comply with the guidelines regarding traffic safety and safe management on the road in accordance COPTTM.

6.12.3.2 *Property Access*

- General
 - Liaison will be undertaken with local residents to minimise the effects on disrupted access.
 - At some locations temporary traffic control will be required and stop/go controls or temporary traffic signals will be sufficient to accommodate traffic.
 - Plating over trenches will facilitate access during passive construction periods.
 - At all times during construction the contractor will be expected to comply with the guidelines regarding traffic safety and safe management on the road in accordance with COPTTM.
- Private driveways

The few private driveways along Ormiston Road which will have to be closed during active construction will require the temporary use of plates during passive construction.

6.13 Ormiston Road – Brownhill Road Transition Station

6.13.1 Description

Most of this section is through currently undeveloped rural land with the exception of a section along Regis Lane which has recently been constructed as a residential road with footways and kerbs. It is approximately 10m wide. There will be sufficient width allowing for a 6m wide active construction strip which incorporates the berms to accommodate two-way traffic during construction.

6.13.2 Assessment of Effects

6.13.2.1 *Transportation Network*

- Extent of effects

The effects of work in Regis Lane are expected to be local and will not be transferred to the arterial road network.
- Through traffic

Due to the residential nature of the area, the majority of the traffic in Regis Lane will be local traffic.
- Bus services

There are no bus services in Regis Lane Road.

6.13.2.2 *Property Access*

- General

By the time construction commences the residential development at Regis Lane will be substantial, however, as the road width will be sufficient to accommodate active construction and two-way traffic the effects on traffic will be minor.

There will be adequate space for two-way traffic to be facilitated without the need for traffic control although, as the residential development increases in the future, temporary traffic control may be required at some locations where stop/go controls will be sufficient to accommodate traffic.

- Private Driveways

There are a number of private driveways along Regis Lane which will have to be closed during active construction.

6.13.3 Mitigation Measures

6.13.3.1 *Transportation Network*

- Through traffic
- Plating over the trench at road crossings will facilitate access during passive construction periods.
- At all times during construction the contractor will be expected to comply with the guidelines regarding traffic safety and safe management on the road in accordance COPTTM.

6.13.3.2 *Property Access*

- General

- Liaison will be undertaken with local residents to minimise the effects on disrupted access.
- At some locations temporary traffic control will be required and stop/go controls or temporary traffic signals will be sufficient to accommodate traffic.
- Plating over trenches will facilitate access during passive construction periods.
- At all times during construction the contractor will be expected to comply with the guidelines regarding traffic safety and safe management on the road in accordance with COPTTM.

- Private driveways

The few private driveways along Regis Lane which will have to be closed during active construction will require the temporary use of plates during passive construction.

7 Overhead Line

7.1 Introduction

This section assesses the likely traffic impacts to be experienced during the construction of the overhead transmission line between the transition station/substation site at Brownhill Road, Whitford, and the Whakamaru North Substation site.

7.2 Route

The route alignment is detailed in Part VIII of the NoR documentation. The route covers approximately 185km and will pass over some 50 or more roads and a railway. Roads are categorised in the local District Plans either as LV (low volume), Level 1 or 2 (depending on the strategic importance and the volume of traffic conveyed), while level 3 is reserved for motorways. The majority of roads crossed by the overhead transmission line are categorised as LV or level 1 in nature. There are however also five major road crossings categorised as level 2, in addition to one rail crossing. There are no level 3 roads crossed.

7.3 Conductor Installation Above Roads

7.3.1 Proposal

As part of the transmission line upgrade the conductors will pass over the carriageways of roads of various categories in the roading hierarchy.

7.3.2 Assessment of Effects

It is expected to take up to two weeks to suspend the conductors along a run of typically 3 to 4km. This depends on a number of factors, not least plant, access, and staffing levels. Other items under the line of the conductors could include houses, roads, water, and overhead utility services. The requirement to protect these will vary and in some circumstances this additional protection will be able to be carried out prior to the conductors being strung.

In order to undertake the stringing of the conductors between pylons where they cross category 1 or 2 roads, road protection methods will be needed. For category 2 roads hurdles will be erected alongside the carriageway with netting strung between. For category 1 roads hurdles and traffic management procedures is the most likely method. This will enable work to be undertaken over a live carriageway. This would require only very short road closures, of a few minutes duration.

Low Volume category roads will be assessed on a one by one basis, and the method deployed will depend on the outcome. This may be road protection or temporary traffic disruption. Any traffic disruptions will be consulted on both with the Local Roding Authority and the local residents.

7.3.3 Mitigation

Consultation, discussion and notification of planned works with local communities, individuals and the Local Roading Authority will be a key item during the construction period.

At all times during construction the contractor will be expected to comply with the guidelines regarding traffic safety and safe management on the road in accordance with COPTTM.

7.4 Conductor Installation Above Railway Track

7.4.1 Proposal

It is proposed to suspend the conductors above the East Coast Main Trunk Railway at Morrinsville.

7.4.2 Assessment of Effects

In order to carry out this work a programme of works will need to be in place with the track operator, this may involve short term track closures but more likely restricted working, involving speed restrictions, to working adjacent to or over the track.

It is expected to take up to two weeks to suspend the conductors. This obviously depends on a number of factors, including plant availability, access and staffing levels. Rail protection will be erected alongside the carriageway with netting strung between. This will enable work to be undertaken while the track is still operational. This would require only very short track closures to ensure safety while working over the line erecting the protection.

7.4.3 Mitigation

Consultation with the railway operator will need to take place to assist in the timing and duration of the works in order to achieve the least disruption. Only freight trains operate regularly on this line. They are infrequent, about one every three hours, but can operate at any time on any day, with slightly less frequency at weekends.

7.5 Access from Roads to Tower Sites

7.5.1 Proposal

The overhead conductor covers a distance of approximately 185km and is spanned on 426 towers, each between 25m and 70m high. The construction of the towers is a steel lattice structure, which will be brought onto site on standard sized low loader transport, in easily manageable sized sections. These sections will be assembled on site.

7.5.2 Assessment of Effects

Each tower site will require access via a 3.5 to 4m wide route. This will need to be of adequate strength and suitable geometry to convey the construction vehicles from the existing road network.

Some of the access routes, both new and existing, may involve temporary / permanent earthworks that will require additional plant and materials.

Some access routes will need to be retained to provide for maintenance.

There will be traffic effects associated with the construction of the towers but they will be minor in nature, isolated and localised as traffic movements to the individual sites will be able to be absorbed on the relevant roads for the construction period.

The traffic effects are typical of construction work requiring the movement of plant, materials and labour to and from a site. In the context of a mainly rural area and quiet roads, the construction traffic for the towers will be noticeable to the local communities, although capacity issues will not arise. It is likely that the frequency of delays (e.g. behind heavy trucks) will increase noticeably but on an isolated basis.

7.5.3 Mitigation

In many cases existing formed accesses onto public road will be utilised in order to reduce traffic problems associated with new construction. Where a new access is to be constructed or an existing access modified to enable its use, there may be a range of approvals required from road controlling authorities. The accesses may require upgrading to the standard required by the roading authority to facilitate the type of vehicles requiring access and visibility requirements.

Where work is undertaken on private land, discussions will take place as to whether the work is to be temporary or permanent. Issues of maintaining the access following the completion of the contract will need to be addressed at that point if necessary to enable future access to the towers for maintenance.

It is not anticipated that access at any of the sites off the public roads will cause any traffic disruption. All possible steps will be taken in the planning at each site in order to reduce the impact on traffic where accesses have to be modified or constructed.

- A proactive programme of liaison will be undertaken with local residents and communities to keep them informed of activities, address issues arising and to minimise the effects on disrupted access.
- At some locations temporary traffic control will be required and stop/go controls or temporary traffic signals will be sufficient to accommodate traffic.
- At all times during construction the contractor will be expected to work in conjunction with the Local Roding Authority and to comply with the guidelines regarding traffic safety and safe management on the road in accordance with COPTTM.

8 Whakamaru and Whakamaru North Substation

8.1 Introduction

Transformers are to be shipped to the Ports of Auckland for onward transfer using a beam set transporter to the Whakamaru North Substation as part of its development required for the Grid Upgrade Project.

The journey from the Ports of Auckland to the Whakamaru North substation site is approximately 230 kilometres and will be made by road, and it could take four to six weeks to complete the transport of the three transformers. The route travels from the Port in the centre of Auckland through the Auckland suburbs. The roads on the route are under the jurisdiction either of Transit NZ, or the City / District Council en route.

The main residential areas that the load will travel through are Auckland, Manukau, Papakura and possibly Hamilton City depending on the final route selected. Additionally there are the smaller towns of Huntley, Cambridge, Putaruru and Tokoroa to pass through.

8.2 Transformer Transport to Whakamaru North Substation

8.2.1 The Proposal

The transformers are to be transported from the Ports of Auckland to the Whakamaru North substation using a beam set transporter arrangement. There will be three transformers to be transported in this manner.

8.2.2 Assessment of Effects

As with the transport of other heavy equipment through urban Auckland, it is important to manage the transit of such a load to ensure that as little disruption is created as possible. Similar care needs to be taken elsewhere on the state highway and (if necessary) other roading systems.

Transformer dimensions are estimated to be approximately 11.5m long, 5m wide and 4m high. It is likely that the largest single item of the transformer will weigh about 300tonnes.

The load is estimated to be 5 metres wide and will generally occupy two lanes of the carriageway, although additional carriageway width may be required when manoeuvring at junctions. The load is expected to travel at variable speeds from 2 km/h to 15 km/h depending on the terrain. Some local road closures may be required and some parking will have to be restricted.

8.2.3 Mitigation

Moving the load overnight will mitigate the potential disruption to traffic. Transit New Zealand requires heavy loads to travel at a predetermined time and on a predetermined route. The complete journey will take a number of nights so every morning, the heavy haulage train will be laid up at a suitable location en route, before recommencing the journey the next night.

There is an established procedure to be followed when carrying out this type of transportation. The procedure consists of consultation and a Traffic Management Plan being drawn up and submitted to the Roading Authority for approval prior to the work taking place. The Traffic Management Plan will involve consultation with the Police and the relevant local authorities, the haulage company and Transit NZ, among others.

The traffic management plan will contain a method statement breaking the route down and providing a full itinerary, of:

- any deviations to avoid low bridges,
- any bridge strengthening required,
- any lay over points etc,

- a detail description of any road closures or other traffic control measures required,
- a full description of all contingency plans should the convoy breakdown.

Transit NZ (and/or the local roading authority) will be consulted as to the requirements when crossing bridge structures, as some may require temporary strengthening in order to withstand the additional load.

The haulage company engaged to carry out the transportation will be experienced at transportation at this scale.

A team of people will accompany the abnormal load and where necessary this will be headed up by the Police with powers to temporarily close roads as the convoy passes. It may also be necessary for utility companies to be on hand during the move to ensure that any problems en-route are solved as quickly as possible i.e. temporary removal / lifting of aerial telephone and power cables or tree trimming.

8.3 Localised traffic disruption at the Whakamaru and Whakamaru North Substation Site During Construction

8.3.1 Description of Road Network and Access

The Whakamaru North Substation Site is a new site to the north of the existing Whakamaru Substation. The existing site will also experience some works and additions. The site can be considered to be just outside of a residential area.

8.3.2 Assessment of Effects

It is not anticipated that during construction, the level of trips generated by the site, both in construction staff or delivery vehicles will cause any congestion problems. Although due to the secluded, rural nature of the Sub-station location there is likely to be a perception of greater levels of heavy traffic.

As described in Part IX, section 6.8, there may be higher traffic movements if large quantities of excavated material need to be removed from site. This will only be known once detailed civil investigations and design is completed.

There are no traffic issues associated with the operation of the site, post construction, due to the low level of trips generated through the sites operation.

8.3.3 Mitigation

Additional contractors parking should be allocated throughout the construction period either on or off the site.

Appendix C 8517 Brownhill Road to Otahuhu
Underground Electricity Transmission
Cables – Proposed Amended
Conditions

8517 Brownhill Road to Otahuhu Underground Electricity Transmission Cables

Designation Number	8517
Requiring Authority	Transpower New Zealand Ltd
Location	443 <u>227</u> Brownhill Road, Whitford to 26-28 Kaitawa Street, Otara
Rollover Designation	Yes
Legacy Reference	Designation 301, Auckland Council District Plan (Manukau Section) 2002
Lapse Date	1 March 2025

Purpose

Electricity transmission - the construction, operation and maintenance of a double-circuit underground 220kV cable as part of the upper North Island Grid Upgrade Project, to convey electricity between the Otahuhu Substation and the ~~substation site at~~ Brownhill Road Substation, and ancillary activities.

The nature of the work is described more particularly in Part VII (excluding section 12 in relation to suggested conditions), and also in Parts II and X of the Notices of Requirement Documentation (dated April 2007), and the Notice of Requirement Documentation to alter the designation dated [Lodgement Month Year]

Conditions

Documents

1. The initial works to give effect to the designation of the Brownhill to Otahuhu underground cable shall be generally in accordance with ~~Maps 24-30 of Appendix V~~ Pages 1-7 of BHL-OTA cable designation area and route (see attachments).

Magnetic Fields (MF)

2. Any new works or equipment shall be designed and operated to limit the magnetic field exposures to the International Commission on Non-Ionising Radiation Protection, Guidelines for limiting exposure to time varying electric, magnetic, fields (1Hz- 100kHz) (Health Physic 99(6):818-836: 2010) (ICNIRP Guidelines). That is the public exposure reference level of 200 μ T for magnetic flux density when measured at 1 metre above ground level directly above any cable under normal operating conditions. (ie, when there are no faults in the transmission system).

3. In order to reduce long-term public exposure to MFs, no habitable buildings shall be constructed within the designated corridor for the underground cable.

Radio frequency

4. All works shall be designed to comply with NZS 6869:2004 Limits and Measurement Methods of Electromagnetic Noise from High-Voltage a.c. Power Systems, 0.15 to 1000 MHz.

Earth potential rise / induced voltages

5. The works shall be designed and constructed to comply with regulations 33, 42, 58, 60, 69 and 87 and Part 2 General safety requirements, Requirements for electrical safety of the Electricity Regulations 1997 2010. ~~as in force at the date of confirmation of the designation~~

6. Any works or equipment shall be designed and constructed so as not to cause existing assets of other utilities to be non-compliant with AS/NZS 4853: 2012 – Electrical Hazard on Metallic Pipelines.

Existing utilities

7. Transpower shall liaise with all relevant utility operators during the detailed design and subsequent construction processes prior to undertaking any work pursuant to this designation and shall ensure that:

- a. it is aware of the location of all utility services existing at the time of construction in or adjacent to the designation; if necessary, exploratory excavation shall be undertaken;
- b. to the greatest extent practicable, all utility services existing at ~~28-May-2007~~ Lodgement Day Month Year (being the date the Notice of Requirement to alter the designation was lodged) located in or adjacent to the designation are protected from any activity associated with the Upper North Island Grid Upgrade Project which may interfere with the proper functioning of the services;
- c. if it is not practicable to avoid a reduction in the level of service in accordance with (b) above, or if services are otherwise damaged, all utility services existing at ~~28-May-2007~~ Lodgement Day Month Year located in or adjacent to the designation are repaired or relocated at Transpower's expense, to the reasonable satisfaction of the affected utility operator; and
- d. ~~reasonable access to~~ existing utility services located in or adjacent to the designation are able to be accessed during construction.

8. Nothing in condition 7(c) requires Transpower to:

- a. provide compensation to any affected utility operator for indirect costs, such as for delays and inconvenience caused; and
- b. put the owner of the utility services in a better position than if the Upper North Island Grid Upgrade Project had not been proposed or installed.

Archaeology: known sites R11/2333 and R11/2384

~~9. Before any construction works are carried out associated with the Upper North Island Upgrade Project, Transpower shall make any minor adjustments to the location of the cable trench within the corridor to ensure that the sites R11/2333 and R11/2384 are not damaged by construction of the cable trench.~~

9. Prior to construction works commencing, an HNZPT archaeological authority should be applied for to undertake works on East Tāmaki Road. The remainder of the works should take place under Transpower's accidental discovery protocol.

Advice note:

This condition is subject to any conditions of any archaeological authority granted under the ~~Historic Places Act 1993~~ Heritage New Zealand Pouhere Taonga Act 2014

Construction Management Plan (CMP)

10. At least 30 working days prior to commencing any construction activity along the designated underground cable route, Transpower shall submit a Construction Management (CMP) to the Council for approval. The Council's Consents Manager shall respond within 20 working days indicating whether approval is given or Transpower's intended approach to:

- a. The proposed construction methodology;

- b. Storage and reuse and top soil, including stockpiling areas;
- c. On-site and off-site disposal of soil;
- d. Silt and dust control, during earthwork stages;
- e. Groundwater and stormwater management, treatment and disposal;
- f. Traffic/property access management;
- g. Contaminated land management procedures;
- h. Construction hours;
- i. Existing network utilities protocols and guidelines;
- j. Access and utilities management;
- k. Subject to other specific conditions, cultural protocols and archaeological requirements;
- l. Land stability management and water quality and sediment controls;
- m. Vegetation disturbance/removal and replacement;
- n. Management of construction activities;
- o. Contractor training, including health and safety;
- p. The intended construction programme, including staging if appropriate.
- q. Management of construction noise;
- r. Community information and liaison;
- s. Temporary activities and equipment storage in specified areas;
- t. Contractor car parking in specified areas;
- u. Security and lighting during construction; and
- v. Situations where the proposed cable depth could differ from the 1500 mm shown on ~~Map 6 or 7 of Appendix V (see attachments)~~, Drawing TP203722 For 220kV 1C*2500sqmm Cable System Typical Trench Drawing Sheet 1 (see attachments) including likely reasons for differing depth and means of resolving any issues arising from that depth.

11. In preparing the CMP in accordance with condition 10, the following minimum requirements shall be met:

- a. Quality soil shall be reused, where appropriate, and suitable stockpiling areas shall be identified;
- b. Spoil which is not reused, where appropriate, and suitable stockpiling areas shall be identified;
- c. Dust on-site shall be minimised to ensure that there is no dust nuisance off-site as a result of the works. Such minimisation could include spraying with water or covering of areas;
- d. Clean stormwater shall be directed away from bare or earthworked areas and sediment laden runoff shall be properly controlled and managed to minimise any discharge of sediments into watercourses;
- ~~e. As far as practicable, disturbance to riparian areas and stream banks and beds shall be minimised during construction;~~
- ~~f.~~ e. Measures for testing and removing any contaminated land along the route shall be developed;
- ~~g.~~ f. Liaison with existing utility providers with underground services within the designated route shall be undertaken;
- ~~h.~~ g. Adequate measures shall be implemented so as to avoid land slope failure;
- ~~i.~~ h. When construction is taking place within the dripline of any tree over two metres in height to be retained on a public road or other public or private land, a qualified arborist shall be engaged to advise on the best method of root pruning and for continuing long-term avoidance of root interference with the cable;
- ~~j.~~ i. Site contractors shall have available at all working times, at an accessible place along the cable route, copies of all designation and consent conditions, the approved Construction Management Plan and the Draft Protocols entitled Transpower Grid Upgrade Project Protocol for Dealing with Kōiwi or Taonga Unearthed During Construction and the Discovery of Sites of Significance, Wāhi

Tapu, Heritage Sites and Archaeological Sites (or updated document). Transpower shall ensure that the contractors understand the designation conditions and consent conditions;

~~k. Transpower shall notify the Council in writing at least 10 working days before commencing works (including a separate notification for works commencing in Turanga Creek, Mangemangeroa Stream and Otara Creek), and shall notify the Councils that works have been completed within 10 working days following completion of the works;~~

~~h.i.~~ Parties adjacent to the route shall be notified prior to commencement of works and shall be regularly updated;

~~m.k.~~ Temporary activities, such as equipment storage shall be undertaken in suitably located areas (ie, not within 20 metres of a watercourse);

~~n.l.~~ Contractor car parking shall be suitably located, so as not to prevent property access; and

~~o.m.~~ Work sites shall be secure and illuminated to restrict access as appropriate.

12. In preparing the CMP in accordance with condition 10, ~~Housing New Zealand Corporation~~ Kāinga Ora shall be consulted.

Advice note:

Where the CMP requires Transpower to give notice to the Council, that notice can be given progressively, as stages of the work are complete.

Construction hours

13. Construction hours shall be as follows:

a. Monday to Friday: 7am to 6pm;

b. Saturday: 8am to 1pm; and

c. Sundays and public holidays: No work. Except where work is necessary outside the specified days or hours for the following purposes:

i. Where work is required to be planned to be carried out at low-traffic times, for example, excavation across busy roads, or cable installation;

ii. Delivery of large equipment;

iii. Emergencies;

iv. Securing of the site or removing a traffic hazard;

v. Cable jointing in self- contained enclosures; or

vi. Where the distance between the work and the nearest residence is 100 metres or more and all other conditions are met.

Construction and Maintenance Noise

14. ~~All~~ The noise from any construction work activity shall be designed, must be measured, assessed, and managed and conducted in accordance with the requirements of ~~to ensure that construction and maintenance noise from the site does not exceed the limits in~~ NZS6803:1999 Acoustics–Construction Noise. Construction work is defined in New Zealand Standard NZS6803:1999 Acoustics – Construction noise.

~~15. Prior to any significant construction work taking place, a noise management plan shall be prepared, with the assistance of a suitably qualified and experienced person, that sets out the management procedures in terms of section 8 and Annex E of NZS6803:1999, and the works shall be undertaken in accordance with that noise management plan (other than emergency works).~~

A Construction Noise and Vibration Management Plan (CNVMP) must be submitted to Auckland Council for certification prior to commencement of any construction works that cannot comply with the guideline upper limits of New Zealand Standard NZS6803:1999 Acoustics–Construction Noise.

The objective of the CNVMP is to identify and require the adoption of the best practicable option to minimise construction noise and vibration effects as far as practical.

16. The ~~noise management plan~~ CNVMP required by condition 15 shall be submitted to the Council's Consents Manager for approval, at least 20 working days prior to the works commencing. The Council's Consents Manager shall respond within 20 working days indicating whether approval is given or refused. Approval shall not be unreasonably withheld.

Advice note:

The ~~noise management plan~~ CNVMP required by condition 15 can be incorporated into, and be part of the construction management plan required by condition 10.

Vibration

17. Vibration from all construction activities shall not exceed the limits of, and shall be measured and assessed in accordance with, German Standard DIN 4150-3 (1999-02) Structural Vibration – Effects of Vibration on Structures.

Traffic / roading

18. Transpower shall prepare a Traffic Management Plan (TMP) which is generally consistent with ~~NZTA's Code of Practice for Temporary Traffic Management (COPTTM).~~ the National Code of Practice for Utility Operators' Access to Transport Corridors under the Utilities Access Act 2010

19. The TMP shall be submitted to the Council's Consents Manager for approval at least 20 working days prior to commencement of underground cable construction after consultation with:

- a. The Council;
- b. The following key stakeholders:
 - i. Emergency services (including police);
 - ii. Bus operators;
 - iii. Schools;
 - iv. ~~Housing New Zealand Corporation~~ Kāinga Ora;
- c. Any additional key stakeholders identified by the Council.

20. The council shall respond within 20 working days indicating whether approval is given or refused. Approval shall not be unreasonably withheld.

21. The TMP prepared by Transpower shall recognise that the paramount purpose of roads is the free passage of the public and its vehicles.

22. The TMP prepared by Transpower shall address and provide details of proposed works and/or mitigation measures relating to the following matters:

- a. The likely routes for heavy construction-related traffic;
- b. Details of any necessary road closures, diversions, or deviations which are likely to be required during construction activities, including the likely date, time and duration of such actions. As far as practicable, any necessary temporary road closures should be effected during off-peak periods;
- c. Where diversions or deviations are required, information and recommendations shall be provided by a suitably qualified and experienced traffic engineer of the traffic volumes and capacities of alternative routes, and the likely consequent effects in terms of safety and convenience. The traffic engineer shall ensure that recommended alternative routes are reasonably convenient and capable of safely accommodating diverted or deviated traffic. Transpower shall act on the recommendations

of the traffic engineer in relation to alternative routes. Where traffic modelling related to specific intersections is required, the results of the modelling shall be included (see conditions 23 to 25);

d. Details of the signage intended to advise motorists, residents, stakeholders, and other road users of any road closures, diversions and delays, including examples of signage for diversion routes. Such signage shall be sufficiently clear to enable easy understanding by the general public, and

installed at appropriate locations at least seven days in advance of such road closures, diversions and

delays. Such signage shall include the use of trailer-mounted electronic signs near the most affected roads;

e. Details of methods of proposed information dissemination regarding construction activities and associated traffic effects. These details shall include information regarding likely timing and duration of works, alternative routes, access to properties, and any alterations to public transport services. Methods of information dissemination shall include, but not be limited to, public notices in newspapers, radio announcements, signage, information packages, and direct contact with affected properties along those routes;

f. Inclusion of a communications plan setting out the method of consultation and liaison with key stakeholders and affected parties regarding likely timing and duration of works, alternative routes, access to properties and any alterations to public transport services;

g. Details of prior consultation or community liaison undertaken with affected residents, key stakeholders, schools, public transport providers, emergency services or representative groups regarding proposed road closures, diversions, ~~and~~ delays, on street parking changes and any measures agreed with such groups to address any adverse effects or inconvenience that may arise;

h. Any road diversions, closures, or single lane closures outside Mission Heights Primary School and Mission Heights Junior College must be undertaken, as far as practical, during school holidays or outside school hours.

~~h.i.~~ Details of any measures for the purposes of mitigating adverse traffic effects of construction traffic, including safety matters, relating to cyclists, pedestrians, mobility impaired persons, and school children;

~~h.j.~~ Where the cable is proposed to be installed across major intersections and/or arterial roads carrying higher traffic volumes (such as Ti Rakau Drive, Te Irirangi Drive, Chapel Road, Springs Road, East Tamaki Road), three months prior to the commencement of construction an assessment shall be carried out by a suitably qualified and experienced traffic engineer of:

- i. The traffic volumes using such intersections or roads;
- ii. The likely levels of delays and disruptions which may be experienced as a result of cable construction; and
- iii. Identification of locations where such installation works must be carried out in the most timely manner practicable (including where reasonably practicable, the use of alternative methods of installation other than trenching), so as to minimise delays or inconvenience to road users;

k. How heavy vehicles must avoid travelling past Mission Heights Primary School and Mission Heights Junior College during peak before and after school travel times, during term time (8.00am to 8.45am and 3.00pm to 3.30pm). Heavy vehicles are classified by size, being any construction vehicle that is larger than the average ute or van and has the potential to reduce visibility on the road.

l. Details of how truck drivers will be briefed on the importance of slowing down and adhering to established speed limits when driving past schools, and to look out for school children and reversing vehicles at all times.

~~l.m.~~ Following consultation with public transport providers, details of proposed alternative temporary changes to public transport services during the construction period including but not limited to any route diversions, timetable adjustments, temporary bus stops, and methods of communicating such matters to public transport users.

23. Following consultation with the Boards and/or principals of Mission Heights Primary School, Mission Heights Junior College, Sir Edmund Hillary College and Sancta Maria College (and any schools subsequently established with accesses and/or egresses adjacent to the underground cable route), Transpower shall ensure, as far as practicable, that works avoid school terms so as to minimise disruption to normal school activities. Details of relevant periods shall be included in the TMP.

24. Following consultation with ~~the New Zealand Fire Service~~ Fire and Emergency New Zealand, details shall be provided in the TMP of proposed alternative access to and egress from the fire station located at 341 East Tamaki Road.

25. Transpower shall carry out traffic modelling at the intersections of Johnstones Road/Springs Road/East Tamaki Road and Chapel Road/Accent Drive/Stancombe Road to assess the impact of the construction works on intersection capacity prior to completing the Construction Management Plan and the Traffic Management Plan as required by condition ~~20~~ 18, and incorporate any necessary specific provisions in the CMP.

Advice note:

The traffic management plan required by condition 18 can be incorporated into, and be part of, the construction management plan required by condition 10.

Continuation of access

26. Transpower shall at all times ensure that access to any property temporarily severed by construction is maintained at a level that will enable, as far as practicable, normal operations on the property to continue.

Parking

27. Following consultation with residents, businesses and other directly affected persons, Transpower shall ensure that adequate temporary alternative car parking is provided for residents, businesses and other directly affected persons along or adjacent to the cable route, in the event that construction activity prevents or hinders usual parking. Such arrangements are to be made and advised to affected parties at least five working days prior to the commencement of the work that causes the effect.

Remediation of property, roads and footpaths

28. Other than as provided in condition 29, Transpower shall:

- a. within 10 working days of completion of construction on any land, reinstate any private or public land and property (excluding works in road reserves) as far as practicable to its pre-existing state. Such remediation shall include fences, gardens (excluding trees and grass) and other surface equipment or materials; and
- b. as soon as practicable after the completion of construction, re-grass areas that were previously grassed.

29. As soon as practicable after the completion of construction, Transpower shall repair any damage to public carriageways, ~~and~~ footpaths (and associated road components) and public transport corridors resulting from the impacts of construction. Such repair may involve short-term maintenance to allow for settling and consolidation of carriageways prior to final repair.

Cultural/Spiritual

30. If any urupā, traditional sites, taonga (significant artefacts), or kōiwi (human remains) are exposed during site works, the following procedures shall apply:
- Works in the immediate vicinity of the site that has been exposed shall cease;
 - The site supervisor shall immediately secure the area in a way that ensures that any remains or artefacts are untouched;
 - The site supervisor shall notify representatives of relevant tāngata whenua, ~~the New Zealand Historic Places Trust~~ Heritage New Zealand, the Auckland Council and, in the case of human remains, the New Zealand Police; and
 - The notification in (c) above shall allow such persons being given a reasonable time to record and recover archaeological features discovered before work may recommence on the exposed site.

Post-construction

31. Transpower will, as soon as practicable following completion of the cable works:

- Review the width of the area designated for the project; and
- Identify any areas of designated land that are no longer necessary for the on-going operation, maintenance, renewal and protection of the underground cables and ancillary activities; and
- Remove the designation over any surplus areas identified in (b) above in accordance with section 182 of the Act and provide a plan of the final designated areas to the Council for inclusion in the Auckland Unitary Plan.

Future roading

~~31.~~32. Cable installed in the vicinity of the possible future road connections between:

- ~~The Redoubt Road extension between Regis Lane~~ Kitenga Road and Ormiston Road (as shown on maps 49-50, Manukau City Council Operation District Plan 2002 (see attachments); and
- ~~The possible future road connection between Scenic Drive~~ Redoubt Road and Brownhill Road ~~(as shown on Map 31 of Appendix V (see attachments);~~ shall be buried to a depth that does not prevent construction of those roads due to the presence of the cables, ~~in the locations shown on those plans,~~ in the future.

Auckland Transport

33. The Requiring Authority (Transpower) shall not require Auckland Transport to seek written consent under Section 176(1)(b) of the RMA for the following activities associated with the routine operation, maintenance, replacement and urgent repair of its road and Bus Rapid Transit:

- Road marking; and
- Road resurfacing and repairs, and replacement kerb and channel, with excavations less than 500mm in depth; and
- Installation or reinstallation of signs and support posts with excavations less than 500mm in depth.

Advice notes:

- Any new works or equipment means those works which were not existing prior to the notification of the Auckland Unitary Plan.
- Where the Transpower BHL-OTA designation and the Auckland Transport Bus Rapid Transit – Botany to Rongomai Park designation overlap at the intersection of Ti Irirangi Drive and Accent Drive, during the construction of the earlier project at this location, Transpower and Auckland Transport will endeavour to align timing of construction activities where practicable to minimise the disturbance of the earlier project's operation when construction for the later project occurs.

Attachments

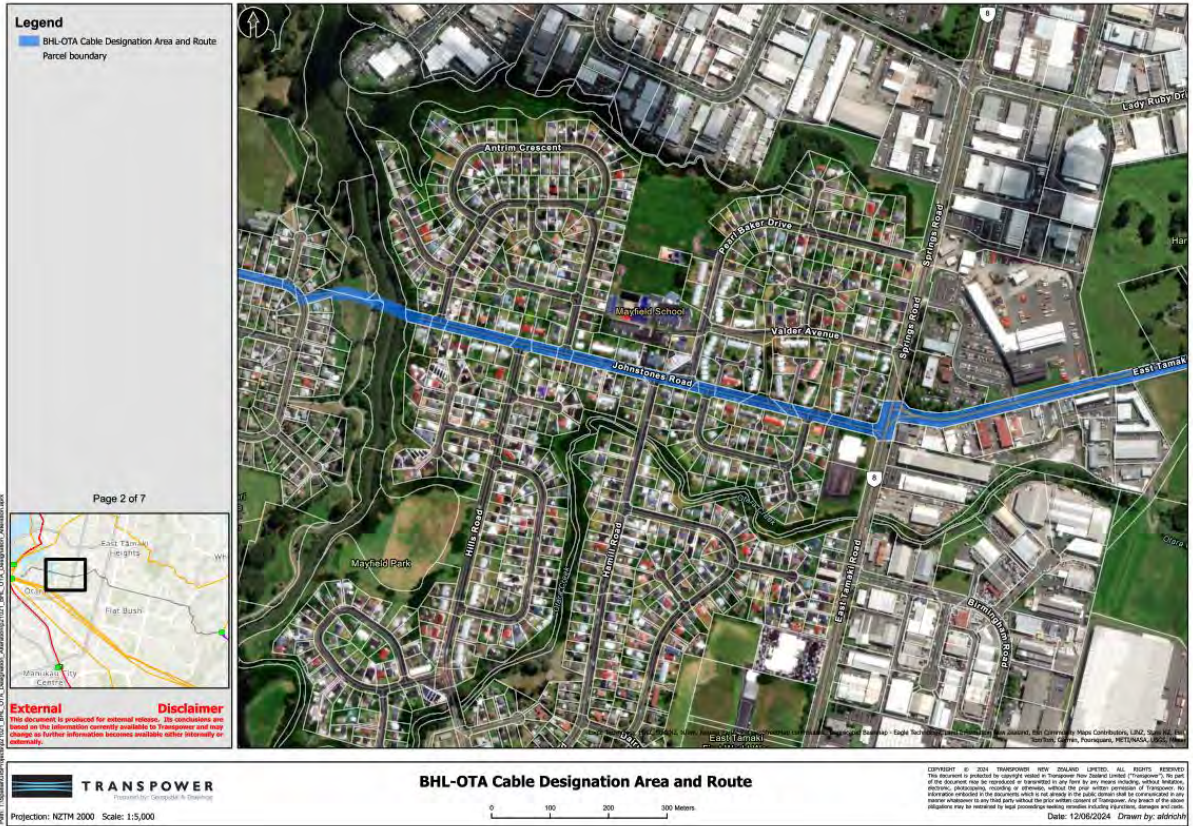
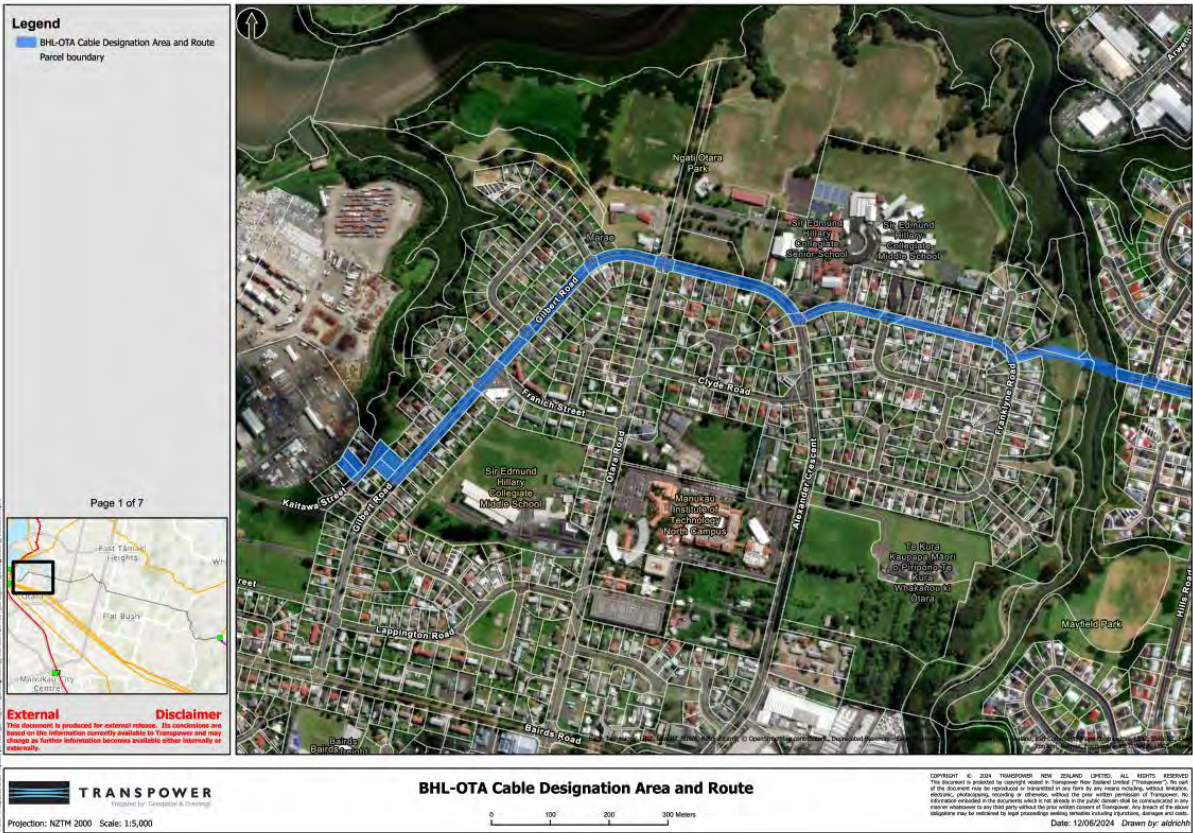
Drawing TP203722 Typical Trench Drawing Sheet 1

Maps 1-7, BHL-OTA cable designation area and route

PLAN	PLAN DESCRIPTION	SHEET
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MAP DESCRIPTION	SHEET
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<u>BHL-OTA CABLE DESIGNATION AREA AND ROUTE</u>	<u>PAGE 1 OF 7</u>
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Legend

BHL-OTA Cable Designation Area and Route
Parcel boundary

Page 5 of 7

External
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TRANSPOWER
Prepared by: Consultants & Engineers

Projection: NZTM 2000 Scale: 1:5,000



BHL-OTA Cable Designation Area and Route



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Legend

BHL-OTA Cable Designation Area and Route
Parcel boundary

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TRANSPOWER
Prepared by: Consultants & Engineers

Projection: NZTM 2000 Scale: 1:5,000



BHL-OTA Cable Designation Area and Route



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Schedule of Legal Descriptions

Parcel ID/ Appellation	
Lot 38 DP 122457	5214767
Lot 39 DP 122457	5258386
5213395	Lot 1 DP 205294
Lot 44 DP 122457	5226343
Lot 45 DP 122457	Lot 26 DP 615
5220406	Lot 28 DP 317068
5229707	Sec 3 SO 70224
5234114	5212610
5234115	5218779
5242071	5263414
5245483	6755102
5247685	6868736
5253250	6868737
5211477	Sec 2 SO 70224
5253250	5263413
5243048	6576298

5209287	Lot 2 DP 348822
5217576	Lot 5 DP 348822
5235744	6755102
5245975	5247056
5259209	5237233
Lot 185 DP 50993	5218750
Allot 355 Parish of Pakuranga	Lot 1 DP 370733
5099005	5263064
5267324	5208695
Lot 279 DP 50344	5225858
5206109	5244805
5215068	Sec 1 SO 68877
5248339	Lot 1 DP 168092
5228620	5208692
5250436	5208693
5237621	5216198
5256686	5257455
5208934	5257462
5245707	5259600
5210416	7060314
Lot 500 DP 436444	Lot 2 DP 182255
Reclaimed Crown Foreshore Survey Office Plan 47238	Lot 3 DP 348822

<u>Parcel ID</u>	<u>Appellation</u>
5074724	Lot 38 DP 122457
4817570	Lot 39 DP 122457
5213395	Road
5168529	Lot 44 DP 122457
4701869	Lot 45 DP 122457
5220406	Road
5245483	Road
5229707	Road
5242071	Road
5234115	Road
5247685	Road
5234114	Road
5253250	Road
5211477	Road
5243048	Road
5235744	Road
5245975	Road
5209287	Road
5259209	Road
5217576	Road

<u>4755221</u>	<u>Allot 355 PSH OF Manurewa</u>
<u>8028879</u>	<u>Section 2 SO 541424</u>
<u>5099005</u>	<u>Reclaimed Crown Foreshore Survey Office Plan 47238</u>
<u>5267324</u>	<u>Hydro</u>
<u>4808525</u>	<u>Lot 279 DP 50344</u>
<u>5214856</u>	<u>Road</u>
<u>5247445</u>	<u>Road</u>
<u>5237621</u>	<u>Road</u>
<u>5247453</u>	<u>Road</u>
<u>5208934</u>	<u>Road</u>
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<u>5206109</u>	<u>Road</u>
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<u>5260632</u>	<u>Road</u>
<u>5263411</u>	<u>Road</u>
<u>6746089</u>	<u>Lot 1018 DP 340679</u>
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<u>6755102</u>	<u>Lot 1019 DP 348822</u>
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<u>5263414</u>	<u>Road</u>
<u>5218750</u>	<u>Road</u>
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<u>5208695</u>	<u>Road</u>
<u>5208695</u>	<u>Road</u>

<u>6832592</u>	<u>Lot 501 DP 363171</u>
<u>6934723</u>	<u>Lot 503 DP 378310</u>
<u>7350313</u>	<u>Lot 200 DP 445943</u>
<u>6961695</u>	<u>Road</u>
<u>5259436</u>	<u>Road</u>
<u>5210561</u>	<u>Road</u>
<u>5249045</u>	<u>Road</u>
<u>5216198</u>	<u>Road</u>
<u>7060314</u>	<u>Part Allot 205 PSH OF Pakuranga</u>
<u>5216198</u>	<u>Road</u>
<u>7060314</u>	<u>Part Allot 205 PSH OF Pakuranga</u>
<u>5257455</u>	<u>Road</u>
<u>5257455</u>	<u>Road</u>
<u>5208692</u>	<u>Road</u>
<u>5257462</u>	<u>Road</u>
<u>5208693</u>	<u>Road</u>
<u>7781813</u>	<u>Lot 502 DP 507828</u>
<u>7743019</u>	<u>Lot 500 DP 500844</u>
<u>5263387</u>	<u>Road</u>
<u>6841781</u>	<u>Lot 74 DP 353601</u>
<u>7656679</u>	<u>Lot 100 DP 486594</u>
<u>7656682</u>	<u>Lot 301 DP 486594</u>
<u>7656683</u>	<u>Lot 302 DP 486594</u>
<u>7656677</u>	<u>Lot 23 DP 486594</u>



Appendix 5

Three Waters Assessment



Brownhill to Otahuhu – Proposed Designation Alteration

Three Waters Assessment

Prepared for

Transpower New Zealand Limited

Prepared by

Tonkin & Taylor Ltd

Date

August 2024

Job Number

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1 Project overview

In 2007, a designation was confirmed for the Transpower 220kV underground cable from the proposed Brownhill Substation/Transition Station to the Otahuhu Substation as part of the North Island Grid Upgrade Project (Designation ref: 8517; 143 Brownhill Road, Whitford to 26-28 Kaitawa Street, Otara).

Since the designation was confirmed in the Auckland Unitary Plan (AUP), the wider area around the original route has been developed. Accordingly, Transpower is seeking an alteration to the designation to realign the transmission line corridor within the road reserve where practicable.

This report supersedes our previous report, dated October 2023.

Following further engineering work, Transpower has determined that maintaining the shorter (existing) designation route through Jeffs Road is more cost-effective than the proposed re-routing. This removes sections of the originally proposed designation alteration, along:

- Valderama Drive
- Argento Avenue
- Wallen Road
- Ormiston Road (part - from Valderama Drive to future Jeffs Road Extension).

2 Scope and limitations of this report

As part of the technical supporting information for the application to alter the designation, Transpower has requested Tonkin + Taylor to provide the following input:

- Technical commentary on the potential impacts or benefits with respect to three waters infrastructure from moving the transmission line corridor into the road reserve, and to re-align the designation away from existing stormwater management areas.

This report focuses on those areas of the existing AUP designation proposed to be altered (which have been highlighted in yellow in the figures in the following sections). The areas from the existing designation which remain unchanged have been shown highlighted as green, and areas of existing designation to be removed have been highlighted in red.

In particular, this report identifies water supply, wastewater, and stormwater infrastructure in relation to the proposed new designation alignment sections. The report also comments on any areas that may be affected during the construction and operation phases of the future transmission line.

The data used to inform this report has been obtained from the Auckland Council Geomaps database, which provides (inter alia) three waters underground infrastructure information. This includes transmission and local network water supply and wastewater pipelines, and stormwater pipelines conduits and connecting infrastructure.

3 Route analysis

The following sections follow the proposed designation route and details the three waters infrastructure that falls within the implicated road corridor.

3.1 East Tamaki Road, from no. 375 to Accent Drive (approximately 590 m)

East Tamaki Road, leading eastwards from number 375, is a 2-lane, 2-way regional arterial route which is between 9.5 m and 11 m wide. It is of an undeveloped semi-rural nature for much of its length (despite being surrounded by an industrial area), with wide grassed berms and no kerb and channel until around 100 m from the intersection with Accent Drive. At this point the carriageway widens to over 14 m between kerb faces. The road reserve is approximately 22 m wide.



Figure 3.1: East Tamaki Road (image courtesy Transpower).

3.1.1 Water pipelines

No transmission network water pipelines will be crossed along this section. However, two local network lines lie across the road corridor (200 mm diameter uPVC and 200 mm diameter ductile iron) and will be crossed by the designated alignment. The power cables will run alongside several other local network lines and may cross these depending on where in the road corridor they are laid.

3.1.2 Wastewater pipelines

Instead of following the Tamaki South East branch sewer pipeline as in the original designation, the new route crosses the wastewater transmission network pipeline (1200 mm diameter concrete) and continues along East Tamaki Road.

Two local network wastewater pipelines lie perpendicular to the road corridor and will be crossed (150 mm diameter vitreous clay and 100 mm diameter uPVC). Another local network line runs alongside the road corridor (Asset identification 1550447).

3.1.3 Stormwater pipelines

There are several public stormwater pipes laid along the East Tamaki Road alignment, 375 mm and 300 mm diameter. Crossing the road reserve are several stormwater pipes (up to 450 mm diameter) as well as catchpit connections to stormwater manholes (generally up to 300 mm diameter).

3.2 Accent Drive, from East Tamaki Road to Te Irirangi Drive (approximately 500 m)

Accent Drive from East Tamaki Road to Te Irirangi Drive is a 2-lane, 2-way arterial route with a flush median. This section of the road serves a light industrial area with three connecting cul-de-sac roads that service industrial properties. The road formation includes kerb and channel with footpaths and grass berms both sides, with a carriageway width of approximately 12 m between kerb faces. The intersections at each end of this section widen to over 25 m between kerb faces at the throats. The road reserve is approximately 26 m wide. The intersections at each end of this section include a left-turn slip lane.



Figure 3.2: Accent Drive to Te Irirangi Drive (image courtesy Transpower).

3.2.1 Water pipelines

No transmission network water pipelines will be crossed. However, four local network lines lie across the road corridor (200 mm diameter ductile iron, two 100 mm diameter uPVC, 300 mm diameter polyethylene). The power cables will run alongside several other local network lines and may cross these depending on where in the road corridor they are laid.

3.2.2 Wastewater pipelines

No transmission network wastewater pipelines will be crossed. However, two local network wastewater pipelines lie across the road corridor (150 mm diameter Asbestos cement and 150 mm diameter uPVC). The power cables will run alongside several other local network lines and may cross these depending on where in the road corridor they are laid (Asset identification 1553653, 1556909, 1572286, 1572287, 1572289, 1572290).

3.2.3 Stormwater pipelines

There are several public stormwater pipes laid along the Accent Drive to Te Irirangi Drive alignment, 450 mm and 750 mm diameter. Crossing the road reserve are several stormwater pipes (up to 1050 mm diameter) as well as catchpit connections to stormwater manholes (generally up to 225 mm diameter).

3.3 Crossing Te Irirangi Drive (approximately 35 m)

Te Irirangi Drive is a very busy regional arterial road with Average Daily Traffic count of approximately 31,700 vehicles per day. It comprises two lanes in each direction with a wide raised central median. The width of the carriageway at the intersection is approximately 35 m. Te Irirangi Drive has a posted speed limit of 80 km/hour in both directions. The intersection with Accent Drive is signalised, with four left-turn slip lanes. Two southbound lanes from Te Irirangi Drive are dedicated to right-turn into Accent Drive westbound, indicating that a considerable volume of traffic into Accent Drive comes from this direction.

3.3.1 Water pipelines

There are no water supply pipelines or assets along this stretch of the proposed alterations to the designation.

3.3.2 Wastewater pipelines

No transmission network wastewater pipelines will be crossed; however, one local network wastewater pipeline lies across the road corridor (150 mm diameter uPVC).

3.3.3 Stormwater pipelines

There is one public stormwater pipe laid across the road reserve (300 mm) as well as catchpit connections to stormwater manholes (generally up to 225 mm diameter).

3.4 Accent Drive, from Te Irirangi Drive to Chapel Road (approximately 520 m)

Accent Drive from Te Irirangi Drive to Chapel Road is a 4-lane, 2-way arterial route with a flush median. This section of the road serves a residential area and recreation reserves along its length. The road is fitted with kerb and channel with footpaths and grass berms both sides and has a carriageway width of approximately 15m between kerb faces. There is a combination of yellow "No Stopping At All Times" (NSAAT) marking on both sides with some sections that have direct access for residential properties reducing to single lane with designated shoulder parking.

A dozen or so properties have direct access onto the road, with a large number being accessed by three local roads: Wayne Francis Drive, Siedeberg Drive and Savona Drive.

The intersections at each end of this section widen to over 25 m between kerb faces at the throats. The road reserve is of the order of 27 m wide. The intersections at each end of this section are fitted with a left turn slip lane.



Figure 3.3: Accent Drive from Te Irirangi Drive to Stancombe Road (image courtesy Transpower).

3.4.1 Water pipelines

No transmission network water pipelines will be crossed; however, two local network lines lie perpendicular to the road corridor and will be crossed (both 150 mm diameter uPVC). The power cables will run alongside several other local network lines and may cross these depending on where in the road corridor they are laid.

3.4.2 Wastewater pipelines

No transmission network wastewater pipelines will be crossed; however, two local network wastewater pipelines lie perpendicular to the road corridor and will be crossed (150 mm diameter uPVC). The power cables will run alongside two other local network lines and may cross these depending on where in the road corridor they are laid (Asset identification 1595637 and 1595636).

The proposed route then joins back to the original designation and runs alongside the Chapel Branch sewer transmission network pipeline.

3.4.3 Stormwater pipelines

The proposed designation crosses an upper tributary stream of Otara Creek public lined stormwater channel between Siedeberg Drive and Savona Drive, with two 225 mm diameter stormwater pipes crossing the road reserve at the same location (Asset identification 2000324927 and 2000808507). There are no details of the stream waterway under the road or its size, but it is assumed that the stream is conveyed under the road in a concrete culvert or similar.

There are several public stormwater pipes laid along the Accent Drive alignment, from Te Irirangi Drive to Chapel Road, up to 1350 mm diameter. Crossing the road reserve are several stormwater pipes (up to 1200 mm diameter) as well as catchpit connections to stormwater manholes (generally up to 225 mm diameter).

3.5 Stancombe Road, from Chapel Road to Kensway Drive (approximately 770 m)

Stancombe Road is an arterial road with a specified minimum carriageway width of 16 m. This section is a 2 lane, 2-way road with kerb and channel both sides and a flush median (a few small sections have a raised median) with formalised shoulder parking and a painted cycle lane either side for most of its length. It services residential properties and the Fo Guang Shan Buddhist Temple on the north side, with a large recreational reserve (Barry Curtis Park) on the south side.



Figure 3.4: Stancombe Road (image courtesy Transpower).

3.5.1 Water pipelines

No transmission network water pipelines will be crossed; however, one local network line lies perpendicular to the road corridor and will be crossed (50 mm diameter polyethylene). The power cables will run alongside several other local network lines and may cross these depending on where in the road corridor they are laid.

3.5.2 Wastewater pipelines

No transmission network wastewater pipelines will be crossed; however, two local network wastewater pipelines lie perpendicular to the road corridor and will be crossed (150 mm diameter uPVC). The power cables will run alongside various other local network lines and may cross these depending on where in the road corridor they are laid (Asset identification 1594316, 1556468, 1595350).

3.5.3 Stormwater pipelines

There are several public stormwater pipes laid along the Stancombe Road alignment, up to 600 mm diameter. Crossing the road reserve are several stormwater pipes (up to 1200 mm diameter) as well as catchpit connections to stormwater manholes (generally up to 225 mm diameter).

4 Proposed cable designation conditions

It is noted that the Brownhill Road to Otahuhu Underground Electricity Transmission Cables Designation Conditions (Transpower 8 June 2023) include the following provisions relating to utilities (assumed to include inter alia water supply, wastewater and stormwater assets):

- 6 *Any works or equipment shall be designed and constructed so as not to cause existing assets of other utilities to be non-compliant with AS/NZS 4853: 2012 – Electrical Hazard on Metallic Pipelines.*
- 7 *Transpower shall liaise with all relevant utility operators during the detailed design and subsequent construction processes prior to undertaking any work pursuant to this designation and shall ensure that:*
 - a *it is aware of the location of all utility services existing at the time of construction in or adjacent to the designation; if necessary, exploratory excavation shall be undertaken.*
 - b *to the greatest extent practicable, all utility services existing at 28 May 2007 [Insert alteration NOR lodgement date] (being the date the Notice of Requirement to alter the designation was lodged) located in or adjacent to the designation are protected from any activity associated with the Upper North Island Grid Upgrade Project which may interfere with the proper functioning of the services.*
 - c *if it is not practicable to avoid a reduction in the level of service in accordance with (b) above, or if services are otherwise damaged, all utility services existing on 28 May 2007 [Insert alteration NOR lodgement date] located in or adjacent to the designation are repaired or relocated at Transpower's expense, to the reasonable satisfaction of the affected utility operator; and*
 - d *reasonable access to existing utility services located in or adjacent to the designation are able to be accessed during construction.*
- 8 *Nothing in condition 7(c) requires Transpower to:*
 - a *provide compensation to any affected utility operator for indirect costs, such as for delays and inconvenience caused; and*
 - b *put the owner of the utility services in a better position than if the Upper North Island Grid Upgrade Project had not been proposed or installed.*
- 10 *At least 30 working days prior to commencing any construction activity along the designated underground cable route, Transpower shall submit a Construction Management (CMP) to the Council for approval. The Council's Consents Manager shall respond within 20 working days indicating whether approval is given or Transpower's intended approach to:*
 - i *Existing network utilities protocols and guidelines.*
 - j *Access and utilities management...*
- 11 *In preparing the CMP in accordance with condition 10, the following minimum requirements shall be met:*
 - g *Liaison with existing utility providers with underground services within the designated route shall be undertaken...*

It is considered that these conditions, as proposed, are appropriate for planning of design, management and construction of new electricity transmission works in the designation, and for the operation and maintenance of these assets, in relation to existing three waters infrastructure. The conditions require Transpower to engage and consult with the various utility operators to ensure safe installation and operation of the new transmission works in the vicinity of the existing utility infrastructure.

5 Summary

There are various three waters pipelines and connections laid along and across the road reserve for the existing and proposed alteration to designation.

Only local network water supply pipelines are potentially affected, with no transmission network infrastructure along the route. One wastewater transmission network pipeline affected on Accent Drive (Tamaki South East branch sewer) and several local network pipelines.

There are numerous stormwater pipes and catchpit connection along and across the proposed alteration to the designation in various locations. There is also one culvert crossing of an upper Otara Stream tributary along Accent Drive.

Generally, three waters infrastructure can be expected in 1 m to 3 m below the road carriageway level in the public road reserve depending on the size of the pipeline, with the following Auckland Code of Practice standards for pipe cover:

- Wastewater pipelines, 900 mm minimum cover:
 - A graded connection in the road reserve must have a minimum cover of 450 mm at the highest point.
- Water supply pipelines:
 - In carriageways a minimum 900 mm up to a maximum of 1,200 mm.
 - In berms a minimum cover of 600 mm and up to a maximum of 1,000 mm.
- Stormwater pipelines:
 - In the road reserve the cover shall be not less than 1,000 mm.

However, prior to any construction works, planning should include for survey of existing infrastructure, and/or collation of asset records and information from utility operators to confirm locations of three waters pipeline infrastructure along the route.

Proposed cable designation conditions require Transpower to engage and consult with the various operators of existing utilities to ensure safe installation and operation of the new transmission works in the vicinity of the existing utility infrastructure. It is considered that these conditions, as proposed, are appropriate for planning of design, management and construction of new electricity transmission works in the designation, and for the operation and maintenance of these assets, in the vicinity of existing three waters infrastructure.

6 Applicability

This report has been prepared for the exclusive use of our client Transpower New Zealand Limited, with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose, or by any person other than our client, without our prior written agreement.

We understand and agree that our client will submit this report to Auckland Council as the regulatory authority who will use this report for the purpose of processing the Alteration to Designation.

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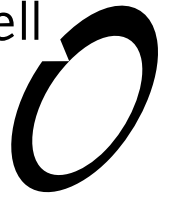
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Appendix 6

Ecological Assessment

Boffa Miskell



BHL-OTA Cable Designation Change

Assessment of Ecological Effects
Prepared for Transpower





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1.0 Introduction

1.1 Project Background

Transpower is the requiring authority in respect of the Brownhill Road to Otahuhu (BHL-OTA) Cable Designation (Designation 8517 in the Auckland Unitary Plan – Operative in Part (AUP)). The designation provides for future construction, operation and maintenance of a double-circuit underground 220kV cable (and ancillary activities) between the Otahuhu Substation and the substation site at Brownhill Road. Proposed BHL-OTA Designation Alteration Land Requirement Plan drawings prepared by Transpower for this application show the existing and proposed designated areas, and designated areas to be removed.

The cable has not yet been installed but Transpower holds easements, in perpetuity, over all privately-owned land along the designated route (easements have been relinquished over land that has subsequently become road). As part of its ongoing planning in the Auckland region, the designation route has been reviewed and changes are proposed to follow roads as far as practicable, which will better align the designation route with the development pattern in the area.

1.2 Report Scope

This report sets out an assessment of ecological effects to support a Notice of Requirement for a minor alteration to a designation.

Of particular ecological interest is the area where the existing designation route crosses green space directly north of the Sancta Maria College and through a stream corridor adjacent to Te Puke o Tara Sports Park. The existing designation route is to be removed from these areas and applied to nearby road corridors.

2.0 Assessment Approach

A site walkover was undertaken on 5 April 2023 in the vegetated areas directly north of the Sancta Maria College and along the Ōtara Creek tributary from Te Puke o Tara Sports Park to Te Irirangi Drive. Vegetation communities present and habitat characteristics were noted, and incidental bird observations were recorded.

No field surveys of aquatic or terrestrial fauna were undertaken. Existing databases, including the New Zealand freshwater fish databases, eBird.org, iNaturalist.nz, and Department of Conservation Bat and Herpetofauna Databases, were searched for records near the site and in the surrounding landscape.

2.1.1 Data constraints

The following data constraints have been identified and taken into consideration for this assessment:

- eBird: An open-source application for people to upload avifauna observations. Anyone can upload records, so this includes a wide range of species identification skills, does not employ a standardised survey method or consistency in survey effort between sample intervals or locations, which adds to the variability of the records.
- iNaturalist: An open-source application for people to upload flora and fauna observations. As for eBird, observations are 'incidental' rather than systematic, with a bias towards more easily observed species. Recorders are differentiated on the basis of their expertise, but observations are not validated through collection of specimens.
- Fauna databases (Freshwater fish, bats, lizards) are compiled from observations made by technical specialists in the course of field sampling, and use standardised sample methods. However, coverage is patchy, therefore an absence of records does not indicate an absence of fauna populations.
- Records from all databases are retained indefinitely, so caution should be exercised in relying on old records (i.e., more than 5 years).

3.0 Ecological context and values

3.1 Site Context

The BHL-OTA designation proposed for realignment is mainly located within the Tamaki Ecological District, extending into Hunua Ecological District as it crosses into rural land towards Whitford.

Tamaki Ecological District generally encompasses Takapuna, East Coast Bays, and the Auckland Isthmus. The area's original lowland forest cover has been almost entirely removed from the isthmus, and freshwater, riparian, estuarine and coastal environments are the main natural ecological features remaining.

The BHL-OTA designation proposed for realignment is between large estuarine inlets draining to the Manukau Harbour to the west, and Waitemātā harbour (the receiving environment for this catchment) to the north. The surrounding landuse is a mix of commercial/ industrial and suburban residential development, extending eastwards to the rural-urban fringe.

The AUP Significant Ecological Areas (SEA) overlay does not cover any parts of either the existing or proposed designation route, however we note that the SEA overlay includes a section of Ōtara Creek tributary upstream of the site. Schedule 3 of the AUP (Significant Ecological Areas – Terrestrial) notes that this area meets Factor 2 (threat status and rarity). This may be the location of a previous giant kokopu (*Galaxias argenteus*) sighting (refer Section 3.4).

3.2 Vegetation

Ōtara Creek Tributary

The existing BHL-OTA designation intersects an area of revegetated riparian corridor (~85 – 150 m wide) along a tributary of Ōtara Creek bounded by commercial development to the north

and south. Historic aerial photographs¹ show agricultural use of the land surrounding the watercourses with patches of remnant kanuka scrub in 1996, with ongoing vegetation clearance so that by 2006, almost no woody vegetation remained.

Revegetation of the land surrounding the Ōtara Creek tributary within the existing designation occurred after 2011, and extensive portions were well established by 2016, indicating that the woody native vegetation within the site is approximately 10 –13 years old. Vegetation on land surrounding the stream corridor comprises dense kanuka scrub approximately 4 – 6 m tall, with minimal understorey (see Figures 1 & 2) other than local patches of ponga and ground ferns (*Histiopteris incisa*). Willow weed dominates broad, marshy riparian terraces within the active floodplain of the stream (Figures 3 a, b), interspersed with clumps of flax, giant umbrella sedge and *Carex* species (*C. lesssoniana*, *C. secta*).

Recent (estimated 3-year-old) plantings have been established on low-lying land adjacent to the existing revegetated corridor, southward of Te Puke o Tara Sports Park, comprising manuka, cabbage trees and sedges. Rushes (*Juncus* spp) and buttercup dominate the ground cover (Figures 4, 5).



Figure 1: Kanuka scrub surrounding Otara Creek tributary.



Figure 2: Bare ground beneath kanuka stand.

¹ <https://geomapspublic.aucklandcouncil.govt.nz/viewer/index.html>



Figure 3 a, b: willow weed – dominated riparian terraces.



Figure 4: Kanuka scrub south of Te Puke O Tara Park.



Figure 5: Recent native planting south of Te Puke O Tara Park.

Sancta Maria Ponds and Reserve

Eastward of Te Irirangi Drive, the existing designation route overlies the channel of the Ōtara Creek tributary and the southern margin of the Sancta Maria stormwater pond.

Auckland Council aerial imagery indicates the Sancta Maria stormwater ponds were constructed in around 2003, and plantings around the natural stream corridor and constructed ponds were established around 2005.

Kanuka dominates the woody canopy, interspersed with a variety of secondary native forest species (karaka, totara, titoki, lemonwood, cabbage trees, etc). Vegetation around the active floodplain mainly comprises aquatic and wet tolerant herbs (willow weed, buttercup, etc) that have spontaneously established, though patches of native sedges (mainly *Carex lesssoniana*, *C. secta*) indicate that some riparian planting was established in floodplains. Outflow from the stormwater ponds into the natural stream has formed expanses of wetland adjacent to the main channel, and these are also vegetated in willow weed and buttercup with scattered native sedges (fig. 6 a, b).



Figure 6 a, b: Wetland areas around stormwater outfall.

A large, three-sided stormwater pond within an area of grassed reserve is surrounded by a well established buffer of native scrub that extends to the water's edge on two sides, with a narrow fringe of sedges and mown grassland on the eastern side adjacent to Accent Drive (fig. 7).



Figure 7: Stormwater pond adjacent to Accent Drive.



Figure 8: Pied shag on stormwater pond.

Proposed designation route - road corridor

Scattered individual street trees (deciduous exotics and a few small titoki) are situated within the road corridor, mainly along Accent Drive.

3.3 Wetlands

3.3.1 NPS-FM Policy and NES-F Regulations

The National Environmental Standards for Freshwater (NES-F) regulate activities in, and within a 100 m setback of, natural inland wetlands. Regulations apply where the activity is likely to result in the complete or partial drainage of all or part of a natural inland wetland, as well as all vegetation clearance and earthworks within 10 m of a natural inland wetland.

The RMA (1991) definition of a wetland “includes permanently or intermittently wet areas, shallow water, and land water margins that support a natural ecosystem of plants and animals that are adapted to wet conditions”.

The NPS-FM states that a “**natural inland wetland**” is a wetland as defined in the RMA, unless it meets the following exclusions:

- a) *in the coastal marine area; or*
- b) *a deliberately constructed wetland, other than a wetland constructed to offset impacts on, or to restore, an existing or former natural inland wetland; or*
- c) *a wetland that has developed in or around a deliberately constructed water body, since the construction of the water body; or*
- d) *a geothermal wetland; or*
- e) *a wetland that:*
 - i. *is within an area of pasture used for grazing; and*
 - ii. *has vegetation cover comprising more than 50% exotic pasture species (as identified in the National List of Exotic Pasture Species using the Pasture Exclusion Assessment Methodology (see clause 1.8)); unless*
 - iii. *the wetland is a location of a habitat of a threatened species identified under clause 3.8 of this National Policy Statement, in which case the exclusion in (e) does not apply.*

3.3.2 Wetland Features

The wetland delineation protocols (Ministry for the Environment, 2022) follow a consecutive, hierarchical sequence of tests, each requiring an increasing level of detail shown by the wetland delineation flow chart (Figure 9).

The hydrophyte² categories (wetland indicator status ratings: Clarkson (2013) and subsequent updates) are:

- Obligate (OBL): occurs almost always in wetlands (estimated probability >99% in wetlands)
- Facultative Wetland (FACW): occurs usually in wetlands (67–99%)
- Facultative (FAC): equally likely to occur in wetlands or non-wetlands (34–66%)
- Facultative Upland (FACU): occurs occasionally in wetlands (1–33%)
- Upland (UPL): rarely occurs in wetlands (<1%), almost always in ‘uplands’ (non-wetlands).

In applying these definitions, we note that natural inland wetlands are not restricted to indigenous ecosystems or biota, and no reference is made to the wetland feature’s significance, quality, or condition.

Riparian terraces dominated by willow weed species (*Persicaria decipiens*, OBL and *P. hydropiper*, FACW) within the existing designation corridor overlying Ōtara Creek tributary and Sancta Maria Reserve were able to be confirmed as natural inland wetlands using the ‘rapid assessment’.

² Hydrophytes (hydrophytic vegetation) is defined as plant species capable of growing in soils that are often or constantly saturated with water during the growing season.

We note that the areas of willow weed, buttercup and sedges adjacent to outfalls from the stormwater ponds also qualify as wetlands under the RMA, but are excluded from the definition of a natural inland wetland under clause (c), as they developed “in or around a deliberately constructed water body, since the construction of the water body”.

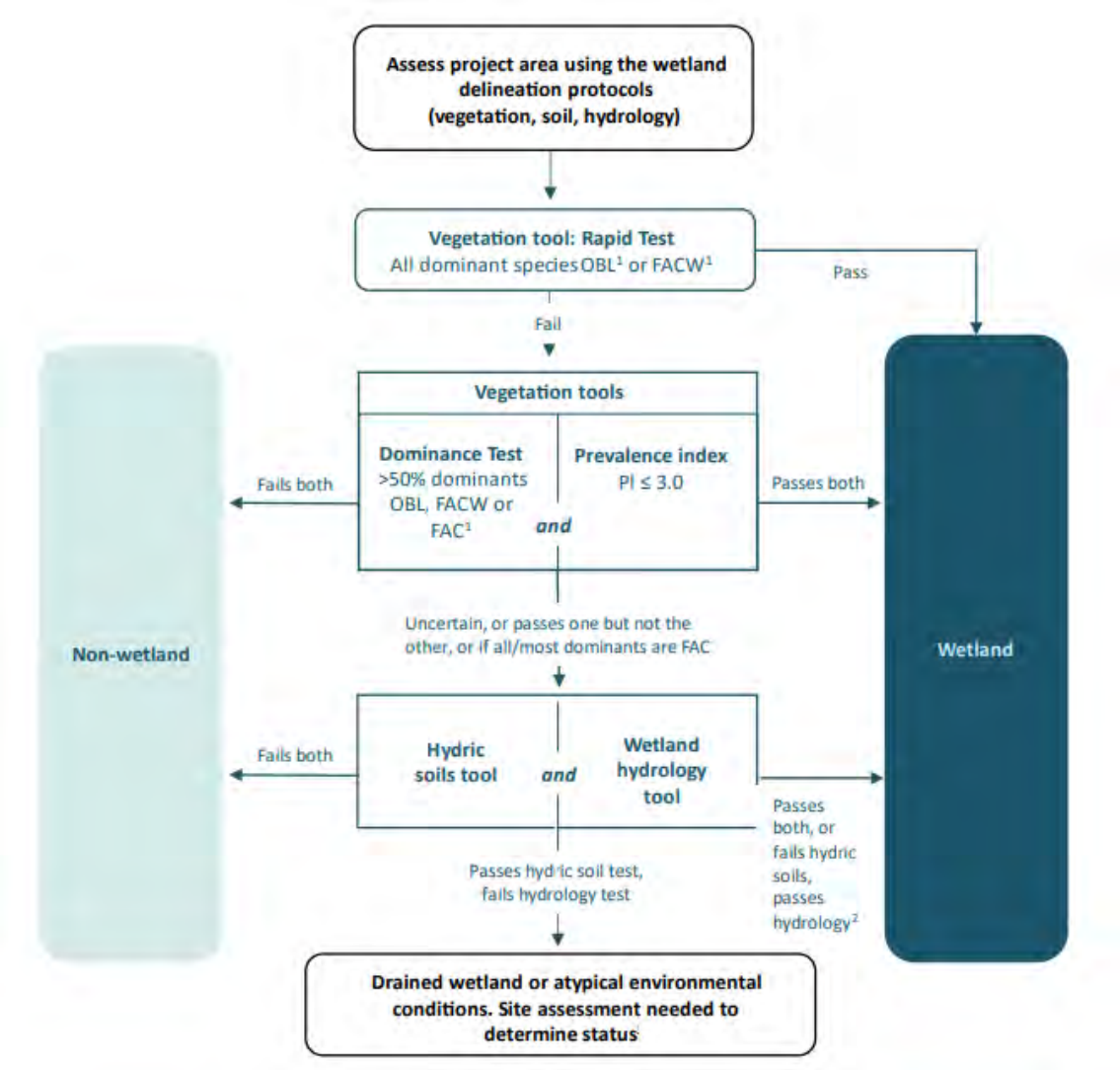


Figure 9: Key steps in hydrophilic vegetation determination from NPS-FM Wetland delineation protocols (Ministry for the Environment, 2022)

3.4 Freshwater Values

Ōtara Creek Tributary is an urban stream that traverses a mixture of residential and rural land in Upper Flat Bush and Whitford, through industrial and residential land in East Tamaki and Ōtara, and into the estuarine reaches of lower Ōtara stream, which discharges to the Tamaki Estuary.

The existing alignment crosses Ōtara Creek Tributary and its revegetated riparian margins in several locations between East Tamaki Road and Accent Drive as the watercourse follows a meandering route through the undeveloped corridor within the otherwise urbanised area.

The New Zealand Freshwater Fish Database (NZFFD) was searched for fish records within the Ōtara Creek Tributary. Two native freshwater fish species, banded kokopu (*Galaxias fasciatus*) and shortfin eel (*Anguilla australis*), have numerous records in Ōtara Creek Tributary, both upstream and downstream of the site (within the existing designation). Eels and banded kokopu are both diadromous species, ie they travel between marine and freshwater environments to complete their life cycle, hence the reach of stream in question is an important migratory corridor for these populations. A single record of common bully *Gobiomorphus cotidianus* has also been reported for the tributary. All three species are listed as 'Not Threatened' (Dunn et al., 2018). Old Manukau City Council signage along a walking track through the plantings notes that giant kokopu *Galaxias argenteus* ('At Risk -Declining'; Dunn et al. 2017) has been sighted in the watercourse (probably within the reach upstream of the site identified as SEA_T_613 in the AUP overlay).

Auckland Council monitors water quality on Ōtara Creek approximately 3km from the Tamaki Estuary with a heavily modified upstream catchment. Macroinvertebrate Community Index scores (MCI) for the 'Otara Creek Kennel Hill' site (downstream of the Te Puke o Tara Sports Park) are low (i.e., taxa present are tolerant of pollution and nutrient enrichment) but show a trend of gradual improvement since monitoring commenced in 2002, though the Macroinvertebrate Average Score Per Metric (ASPM) showed no significant change.

Water quality parameters at the 'Otara Creek Kennel Hill' monitoring site show poor but improving for *E. coli* and turbidity (relative to other urban sites), and moderate but improving nutrient levels (generally within the best 25 – 50% of lowland urban sites assessed).

These improvements are likely to be associated with the progressive land use change throughout the catchment from pastoral farmland to residential land, and riparian revegetation within esplanade reserves that has resulted in near continuous riparian cover of the northern Ōtara Creek tributaries from headwaters to estuarine reaches.

The reach of the Ōtara Creek tributary between Te Puke o Tara Sports Park and Te Irirangi Drive is identified as a Wai Care community restoration site on Auckland Council's Geomaps, and monitoring has been undertaken by Mission Heights Junior College, Botany Downs Secondary College and Tangaroa College (though data for these monitoring points has not been recently updated on the Wai Care website).

The Sancta Maria stormwater ponds have no notable aquatic ecological values, other than their functional value in maintaining and improving water quality for the receiving environment. NZFFD records report grass carp in the main stormwater pond. Wetland areas surrounding stormwater outlets are likely to provide favourable habitat for shortfin eel.

3.5 Terrestrial Fauna Values

3.5.1 Bats

All of New Zealand's bat species are classified as 'Nationally Critical' (O'Donnell et al., 2023), and whilst short tailed bats *Mystacina tuberculata* have disappeared from mainland Auckland, the long tailed bat *Chalinobolus tuberculatus* is still distributed in fragmented populations around the periphery of the Auckland isthmus, including a resident population in the Hunua Ranges, 25km SE of East Tamaki.

Long tailed bats roost beneath bark and within cavities in large, mature canopy trees and frequently switch roost trees on a nightly basis. Due to extensive loss of natural habitat through native forest clearance, the species has adapted to roost in suitable mature exotic tree species (e.g. pine) and occasionally in man-made structures such as bridges and buildings (Pryde et al.,

2005). Long-tailed bats are not commonly found in densely populated areas as they are sensitive to mammalian predators and anthropogenic disturbance, particularly light and noise.

The Department of Conservation's bat database was searched for recorded instances of bats close to the project site in the past 20 years. The closest observations are a single record from Mangemangeroa reserve, approximately 3km from the designation route in 2000, and a 2014 record of a single long tailed bat pass at Redoubt Rd, 5 km from the designation route. Several long tailed bat passes were also recorded at Clevedon Reserve, 12km eastward of the area of interest, in 2014.

While the revegetated stream corridor of the Ōtara Creek tributary does not contain mature, old trees suitable for maternity roosts, individual bats can travel up to 50km when foraging at night and are often detected in unlikely places. Long-tailed bats hunt on the wing, and favour bodies of open water with tall vegetation around the margins. Long-tailed bats typically avoid urban environments, but have been found to use well-vegetated stream corridors as flyways for foraging and commuting between feeding sites (as is the case in South Hamilton). Hence it is possible that long-tailed bats from the Hunua ranges traverse the site at least occasionally during foraging excursions.

While it is unlikely that mature exotic trees between Jeffs Road and Ormiston Road are within an area of 'core' bat habitat (i.e., with communal roosts), these trees may offer suitable habitat for at incidental solitary roosting, as the site is in the headwaters of several well vegetated tributaries which bats may use for foraging.

Roadside amenity trees along the proposed designation route are unlikely to be used by bats, as they are isolated, widely spaced, and within a busy urban environment.

3.5.2 Lizards

Auckland Council lizard records and the Bioweb Department of Conservation Herpetofauna database were searched for lizard records within a 20 km radius of the site. Native species detections in the vicinity include forest gecko *Mokopirirakau granulatus*, elegant gecko *Nautilinus elegans*, ornate skink *Oligosoma ornatum* and copper skink *Oligosoma aeneum*, (all classified as 'At Risk-Declining' (Hitchmough et al., 2021), though no observations were from the project area itself. The closest record is from 2013, when a dead forest gecko was found in the vicinity of Ti Rakau Drive (within 1km of the existing designation route).

The likelihood of arboreal geckos persisting on the site for many years in the absence of woody vegetation cover is low. However, there is a reasonable likelihood that skinks (particularly copper skink) are present, as the site transitioned directly from agricultural land use (with patches of scrub and rank grassland around riparian margins) to revegetated kanuka scrub, with substantial areas of rank grassland retained around waterways.

3.5.3 Birds

'Bird Atlas' records for the 1 km grid square around the Ōtara Creek tributary/ Sancta Maria Ponds (Table 1) are used as an indication of the avifauna community present in the vicinity of the BHL-OTA designation.

A number of species recorded in the area are characteristic of coastal habitats, due to the proximity of the area of interest to the Manukau and Waitematā Harbours and their estuarine inlets. Species which are unlikely to use ecological features identified along the existing or proposed designation routes, such as banded dotterel, wrybill, lesser knot, were not included in Table 1. However, the presence of the stormwater ponds will attract species that favour open

water bodies with adjacent vegetation. The adjacent Barry Curtis Park, which (like Sancta Maria ponds) has areas of open water that are surrounded by well-established riparian planting, is a popular site for recreational bird watching, and eBird observations from Barry Curtis Park include a number of coastal and wetland birds of conservation interest (O'Donnell et al., 2023). In particular, dabchick (Threatened – Nationally Increasing) and several shag species (all At Risk – recovering or At Risk – relict) have been recorded, and are likely to frequent the Sancta Maria Ponds. A pied shag was observed in the main pond during the site walkover (Fig. 8). Waterfowl (and possibly shags) will also use the Ōtara Creek tributary and surrounding vegetation.

Forest bird species from surrounding areas where bird records have been compiled indicate a typical assemblage of common native and exotic species. Kaka (At Risk – Recovering) have been recently recorded in Totara Park, and may incidentally use well established scrub and tall trees.

Table 1: 'Bird Atlas' records of species observed within 1 km of Sancta Maria Ponds (excluding strictly coastal species. Source: eBird, accessed May 2023.

Common name	Species name
New Zealand Dabchick	<i>Poliiocephalus rufopectus</i>
Australasian Gannet	<i>Morus serrator</i>
Black Shag	<i>Phalacrocorax carbo novaehollandiae</i>
Pied Shag	<i>Phalacrocorax varius varius</i>
Little Black Shag	<i>Phalacrocorax sulcirostris</i>
Little Shag	<i>Phalacrocorax melanoleucos brevirostris</i>
White-faced Heron	<i>Egretta novaehollandiae</i>
Royal Spoonbill	<i>Platalea regia</i>
Black Swan	<i>Cygnus atratus</i>
Paradise Shelduck	<i>Tadorna variegata</i>
Grey Duck	<i>Anas s. superciliosa</i>
Grey Teal	<i>Anas gracilis</i>
New Zealand Shoveler	<i>Anas rhynchotis variegata</i>
New Zealand Scaup	<i>Aythya novaeseelandiae</i>
Australasian Harrier	<i>Circus approximans</i>
Pukeko	<i>Porphyrio m. melanotus</i>
Australian Coot	<i>Fulica atra australis</i>
South Island Pied Oystercatcher	<i>Haematopus finschi</i>
Variable Oystercatcher	<i>Haematopus unicolor</i>
Spur-winged Plover	<i>Vanellus miles novaehollandiae</i>
Southern Black-backed Gull	<i>Larus d. dominicanus</i>
Red-billed Gull	<i>Larus novaehollandiae scopulinus</i>
Black-billed Gull	<i>Larus bulleri</i>
New Zealand Pigeon	<i>Hemiphaga novaeseelandiae</i>
Shining Cuckoo	<i>Chrysococcyx l. lucidus</i>
Morepork	<i>Ninox n. novaeseelandiae</i>
New Zealand Kingfisher	<i>Todiramphus sanctus vagans</i>
Welcome Swallow	<i>Hirundo n. neoxena</i>
Grey Warbler	<i>Gerygone igata</i>
New Zealand Fantail (North Island ssp)	<i>Rhipidura fuliginosa placabilis</i>

Silvereye
Tui

Zosterops lateralis lateralis
Prosthemadera n. novaeseelandiae

4.0 Ecological Effects of Proposed Realignment

4.1 Overview

The BHL – OTA designation is largely located in a heavily urbanized environment, and as such, ecological features present within the area of interest contain low biodiversity compared to less modified ecosystems. In particular, roadside margins surrounding the designation corridor are of very low ecological value.

However, waterbodies and areas of native vegetation cover do have ecological value, both as habitat for the native flora and fauna assemblages that persist in these ecosystems, and as a buffer to the downstream receiving environment of the Ōtara Creek estuary and the Waitemātā Harbour. Indications of a gradual improvement in water quality within the Ōtara Creek tributary from long term monitoring data reinforce the value of both stream restoration (including the kanuka scrub and riparian wetland vegetation) and the stormwater infrastructure (including ponds and ‘induced’ wetlands).

4.2 Fauna habitat

Although urban environments are a deterrent to many native species, many native fauna are adaptable and will opportunistically use novel, constructed or restored habitats that meet their requirements. For example, native copper skinks will inhabit areas of rank grassland and debris, which enables them to persist in sites with a long history of human modification. The Sancta Maria stormwater ponds are favourable habitat for dabchick as they have buffering vegetation that limits disturbance to flocks, while structures and surrounding trees on the water’s edge provide roosting habitat for shags (and possibly royal spoonbill).

4.3 Freshwater and wetland features

Between Te Puke O Tara Sports Park and Te Irirangi Drive, the existing designation overlies approximately 1.4 ha of the total 5.2 ha of revegetated kanuka and riparian wetland vegetation. The designation crosses the stream in three places, and overlies approximately 275m of watercourse. Construction of a cable trench along the existing alignment would require extensive clearance and disturbance of revegetated kanuka scrub, riparian wetlands and stream bed.

Within Sancta Maria stormwater reserve, the existing designation overlies approximately 0.3 ha of riparian revegetation and induced wetland, and ~58 m of Ōtara Creek tributary, along with ~0.2 ha of mature forest plantings along the margin of the Sancta Maria stormwater pond.

The proposed designation route will avoid all wetlands and watercourses.

4.4 Consent conditions

The existing designation conditions require a Construction Management Plan (CMP) to be submitted to Auckland Council's Consents Manager for approval at least 30 working days prior to commencing any construction activity. The CMP is to set out Transpower's intended approach to management of a number of aspects of the proposed construction methodology, including in particular:

- specifications for land stability management and water quality and sediment controls (Condition 10l);
- specifications for vegetation disturbance/ removal and replacement (Condition 10m);
- specifications to minimise any discharge of sediments into watercourses (Condition 11d);
- a requirement to (as far as practicable) minimise disturbance to riparian areas and stream banks and beds during construction (Condition 11e);
- a requirement to engage a qualified arborist to advise on the best method of root pruning and for continuing long-term avoidance of root interference with the cable when construction is taking place within the dripline of any tree over two metres in height to be retained on a public road or other public or private land (Condition 11i);
- a requirement to notify the Council in writing at least 10 working days before commencing works (including separate notifications for works commencing in Turanga Creek, Mangemangeroa Stream and Otara Creek), notify that works have been completed within 10 working days following completion of the works (Condition 11k).

The proposed alternative designation route will avoid all watercourses and wetlands, which will remove notification requirements for works in watercourses specified in Condition 11k, and will remove the need for Condition 11e. The required specifications (Conditions 10l and 11d) for management of water and sediment discharges (particularly to watercourses) will be substantially simplified as a result.

The proposed alignment will necessitate the removal (or possible temporary relocation and replacement) of some street trees, however the extent of vegetation clearance is much less than with the existing designation. This will simplify the detailed specifications for vegetation management in the CMP (as required in Conditions 10m and 11i).

5.0 Conclusion

The existing BHL – OTA designation route will impact several features of ecological value, including:

- approximately 400 m in total length of the Ōtara Creek tributary and associated riparian wetlands and revegetated bush margins;
- A potential setback in progressive water quality improvements as a result of disturbance to buffering features (both revegetated and constructed);
- disruption to the migratory route for shortfin eel and banded kokopu populations;
- loss of mature vegetation adjacent to the Sancta Maria stormwater pond which improves its habitat values for native avifauna.

By comparison, the proposed designation route is largely confined to the road alignment and avoids the above effects.

Therefore, the proposed alteration to the designation involves no more than a minor change to the effects on the environment associated with the use of any land or water concerned, except insofar as that the realignment will result in improved ecological outcomes.

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About Boffa Miskell

Boffa Miskell is a leading New Zealand professional services consultancy with offices in Whangarei, Auckland, Hamilton, Tauranga, Wellington, Nelson, Christchurch, Dunedin, and Queenstown. We work with a wide range of local and international private and public sector clients in the areas of planning, urban design, landscape architecture, landscape planning, ecology, biosecurity, cultural heritage, graphics and mapping. Over the past four decades we have built a reputation for professionalism, innovation and excellence. During this time we have been associated with a significant number of projects that have shaped New Zealand's environment.

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Appendix 7 Noise Memorandum



Consultant Advice Note

To	John Sutherland, Transpower New Zealand Limited
Copy	Sharon Dines, Dines Consulting
From	George van Hout, WSP
Date	18 September 2024
File/Ref	240918-ITPA05-GvH-CAN1-Rev3-Acoustic Designation Change
Subject	Assessment of Noise Effects Associated with a Designation Condition Amendment

WSP has primarily been engaged to assess the potential noise impacts of a change to Condition 14 and Condition 15 of Transpower New Zealand Limited (Transpower) Designation 8517 Brownhill Road to Otahuhu Underground Electricity Transmission Cables.

The primary reason for the alteration to Designation 8517 is to relocate the designation route from outside to within the road reserve. However, Transpower has also identified an issue with the construction noise conditions of the Designation that needs to be addressed.

This Consultant Advice Note (CAN) outlines the existing designation conditions, the revised conditions, and the noise effects associated with the changes.

Existing Designation Conditions

There are currently three (3) conditions under the *Construction and Maintenance Noise* section of Designation 8517 conditions. Condition 14 and Condition 15 are recommended to be revised. These conditions are reproduced below:

14. *All construction work shall be designed, managed and conducted to ensure that construction and maintenance noise from the site does not exceed the limits in NZS6803:1999 Acoustics-Construction Noise.*
15. *Prior to any significant construction work taking place, a noise management plan shall be prepared, with the assistance of a suitably qualified and experienced person, that sets out the management procedures in terms of section 8 and Annex E of NZS6803:1999, and the works shall be undertaken in accordance with that noise management plan (other than emergency works).*

The wording of Condition 14 requires that the noise limits in Table 2 and Table 3 within NZS 6803:1999 *Acoustics – Construction noise* (NZS 6803) are not exceeded.

The scope and aims of NZS 6803 are not to restrict construction activities in this way, but to enable them by requiring developers, site operators and/or contractors to manage noise emissions. Compliance with the noise limits is not mandatory (unlike the existing Condition 14 wording); instead, these limits are used to determine the level of noise mitigation required.

Condition 15 references “any significant construction work” the construction work which is “significant” is not defined. Therefore, it is recommended this is reworded to clarify the construction works which requires a CNVMP.

Proposed Designation Conditions

It is recommended that Condition 14 be revised to align with the scope and objectives of NZS 6803. The proposed wording for Condition 14 is provided below:

14. *All construction work shall be measured and assessed in accordance with the requirements of New Zealand Standard NZS6803:1999 Acoustics–Construction Noise. Construction work is defined in New Zealand Standard NZS6803:1999 Acoustics– Construction Noise.*

The wording used in the proposed condition aligns with Section E25.6.1(3) of the Auckland Unitary Plan (AUP). It also aligns with the aims of NZS 6803 and the objectives of the AUP to manage, rather than restrict construction noise.

It is recommended that Condition 15 be revised to:

15. *A Construction Noise and Vibration Management Plan (CNVMP) must be submitted to Auckland Council for certification prior to commencement of any construction works that cannot comply with the guideline upper limits of New Zealand Standard NZS6803:1999 Acoustics–Construction Noise. The objective of the CNVMP is to identify and require the adoption of the best practicable option to minimise construction noise and vibration effects as far as practical.*

The wording used in the proposed condition requires a CNVMP is developed and followed for all construction works that do not comply with the construction noise limits within NZS 6803. This removes the ambiguity of “significant construction works”. The revised wording also clarifies that the CNVMP is to manage the construction effects rather than achieve noise and vibration limits, which is the purpose of a CNVMP.

Noise Effects Discussion

Condition 14

Condition 14 currently restricts any construction works from occurring unless the noise generated is below the recommended noise limits in NZS 6803.

The revision to Condition 14 is less restrictive and permits construction works to occur as long the construction noise is measured, assessed, and managed per NZS 6803. This would allow construction activities to generate higher noise levels than those outlined in NZS 6803, provided that procedures to determine the Best Practicable Option (BPO) for mitigation are developed, followed, and implemented. Note that NZS 6803 states *A noise management plan will often be appropriate to achieve the aims of the Standard*. Therefore, restricting construction work is not in line with the aims of NZS 6803.

The requirement to develop and implement BPO mitigation is already stipulated by existing Designation Conditions 15 and 16, which mandates the implementation of a Construction Noise and Vibration Management Plan (CNVMP), which is in line with the aims of NZS 6803. The use of a CNVMP to manage effects from construction aligns with the objectives of AUP Chapter E26 Infrastructure. Section E26.2.1(4) allows the *development, operation, maintenance, repair, replacement, renewal, upgrading and removal* of infrastructure, as long as adverse effects are avoided, remedied, or mitigated (Section E26.2.1(9)).

Note that the operation, maintenance, and repair of utilities (A1) and the use of underground electricity lines (A22) are permitted activities in all zones as per Chapter E26 of the AUP

(Table E25.2.3.1). It is therefore reasonable to expect construction to occur as part of utility works and not be prohibited if it does not comply with the NZS 6803 noise limits.

The Designation is generally located within the road reserve under the AUP. As per Section E25.6.29, construction works in this zone do not need to comply with the construction noise limits in Sections E25.6.27 and E25.6.28 of the AUP, provided a CNVMP is in place. The proposed Condition 14 aligns with the AUP regarding permitted activities within a road reserve.

For works outside the road reserve where the noise limits are exceeded, the AUP does not prohibit construction works from occurring (unlike the existing Condition 14 wording). Instead, works outside the road reserve under the AUP are allowed as long as duration, frequency, and timing are controlled to manage effects (Objective E25.2(4)). The proposed wording of Designation Condition 14 is in line with this objective within the AUP, allowing construction to occur so long as noise effects are managed. The CNVMP required by Designation Conditions 15 and 16 serves as a method to manage any adverse effects.

In summary, the proposed revised wording for Condition 14 aligns with the existing Designation Conditions, the AUP construction noise requirements, and enables construction works while managing effects in line with NZS 6803. Therefore, the acoustic effects are low.

While there is a change in the location of the designation area, this is not expected to have an acoustic effect in itself. This is because this activity (installation, operation, maintenance, and repair of utilities) is permitted, and expected in the existing or proposed zoning.

Condition 15

Existing Condition 15 only requires a CNVMP when there are “significant construction work”. There is ambiguity on what constitutes “significant” works.

The wording of the revised Condition 15 clarifies which construction works are required to adopt a CNVMP - all works which exceed the NZS 6803 construction noise criteria.

The use of a CNVMP for construction works that exceed the NZS 6803 noise limits aligns with the aims of NZS 6803 (being to manage noise effects from construction) and Objective E25.2(4) of the AUP. In addition, works within the road corridor (where much of the designation is located), only require a CNVMP under the AUP.

The use of a CNVMP where the NZS 6803 construction noise limits are exceeded is also an industry best-practice. Experience on other construction projects of various scales typically have CNVMP's to manage noise effects from construction.

The inclusion of the objective of the CNVMP within the revised Condition 15 clarifies that the CNVMP is to minimise noise and vibration effects. This follows the revised Condition 14 which allows noise levels higher than the NZS 6803 noise levels, so long as BPO mitigation is adopted.

The acoustic effects associated with the revised wording for Condition 15 are low.

Transpower Designations

The discussion in this CAN is specific to Designation 8517. However, it is understood that similarly worded conditions to the existing Designation 8517 conditions given above are used in other Transpower Designations. The limitations of the existing conditions on other Transpower Designations would be the same as those discussed in this CAN.

The recommendations provided in this CAN (i.e. wording changes to Condition 14 and Condition 15) could be adopted over other Transpower Designations with a low noise effect.

As discussed above, the change in wording:

- Does not restrict construction occurring where noise limits are predicted to exceed the noise criteria in NZS 6803.
- Requires BPO mitigation to be implemented at all times.
- Aligns with the aims of NZS 6803 and the objectives of the AUP. It should be noted that noise from construction is not restricted in the AUP, and in particular construction in the roading zone (where much of the Transpower Designations are located) is allowed at any noise level so long a CNVMP detailing BPO mitigation is adopted.

Kind Regards,

George van Hout
Principal Acoustic Engineer
*BBS*Sc, *ME*, *CEng*, *MIOA*, *MASNZ*
Email: George.vanHout@wsp.com



Appendix 8 Consultation Documentation

[Day] June 2023

[Stakeholder]

[Postal Address]

Sent via email: [Contact's email address]

Attention: [Contact's full name]

Dear [Contact's first name]

**RE: CONSULTATION ON ALTERATION TO TRANSPOWER DESIGNATION 8517 AUP(OP)
BROWNHILL ROAD TO ŌTĀHUHU UNDERGROUND ELECTRICITY TRANSMISSION CABLES .**

Transpower is the requiring authority in respect of the Brownhill Road to Ōtāhuhu Underground Transmission Cables Designation, which is identified as Designation 8517 in the Auckland Unitary Plan – Operative in Part (AUP). The purpose of the designation is:

the construction, operation and maintenance of a double-circuit underground 220kV cable as part of the upper North Island Grid Upgrade Project, to convey electricity between the Otahuhu Substation and the substation site at Brownhill Road, and ancillary activities.

The cables have not yet been installed but Transpower holds easements, in perpetuity, over all privately-owned land along the designated route (easements have been relinquished over land that has subsequently become road).

As part of its ongoing planning in the Auckland region, Transpower's systems planning team have reviewed the designation and confirmed that these cables are still required, however the earliest likely need date for it is 2027, though mid 2030s is considered a more realistic timeframe. This designation is due to lapse on 1 March 2025.

At present, resource consents for the associated enabling works to support cable installation are unlikely to be in place by March 2025. Therefore, Transpower will be seeking an amendment to the lapse date to ensure it remains in place until the cables are required.

In addition, as development in the area around the designation route has occurred since the designation was confirmed, it has become apparent that some minor changes to the designation

route would be advantageous to better align the designation with the development pattern in the area (ideally, the designated route would follow roads).

Transpower has sought specialist technical advice to assess the effects of the proposed designation alteration. These subject matters are:

- Ecology
- Archaeology
- Three waters infrastructure
- Traffic impacts

Transpower has identified [*Description of stakeholder's assets and location in relation to designation*] the designation route and is seeking comments on the proposal. The [*stakeholder assets*] in question is the [*brief description of assets*]. [*Overview of how designation alteration may impact on stakeholder's assets*].

There is a condition on the existing designation, that will be retained, which ensures that Transpower will undertake consultation with [*stakeholder*] regarding [*description of the condition and what Transpower would be obligated to do, including condition number*]. This condition may address the concerns of [*stakeholder*], however any feedback on these conditions would be appreciated.

If you would like to receive a technical report to assist with the review of the proposed designation alteration, Transpower can provide this to you in draft. If you do require any additional information from Transpower to inform your consideration of the proposal, please don't hesitate to reach out to the undersigned below.

Transpower intends to lodge the Notice of Requirement to alter the designation by the end of July 2023. It would be great if Transpower could receive comments from [*stakeholder*] by the end of June 2023, if possible.

Yours sincerely,



John Sutherland
Environmental Planner
Environmental Policy and Planning Group
TRANSPOWER NEW ZEALAND LIMITED

Enclosures:

- *Existing designation conditions and proposed amendments*
- *Land Requirement Plans*

8517 Brownhill Road to Otahuhu Underground Electricity Transmission Cables

Designation Number	8517
Requiring Authority	Transpower New Zealand Ltd
Location	143 Brownhill Road, Whitford to 26-28 Kaitawa Street <u>1 Gridco Road</u> , Otara
Rollover Designation	Yes
Legacy Reference	Designation 301, Auckland Council District Plan (Manukau Section) 2002
Lapse Date	1 March 2025 <u>2040</u>

Purpose

Electricity transmission - the construction, operation and maintenance of a double-circuit underground 220kV cable as part of the upper North Island Grid Upgrade Project, to convey electricity between the Otahuhu Substation and the substation site at Brownhill Road, and ancillary activities.

The nature of the work is described more particularly in Part VII (excluding section 12 in relation to suggested conditions), and also in Parts II and X of the Notices of Requirement Documentation (dated April 2007), and the Notice of Requirement to alter the designation dated [month/year of lodgment]

Conditions

Documents

1. The initial works to give effect to the designation of the Brownhill to Otahuhu underground cable shall be generally in accordance with ~~Maps 24-30 of Appendix V~~ the maps showing the BHL-OTA cable designation area and route (see attachments).

Magnetic Fields (MF)

2. Any new works or equipment shall be designed and operated to limit the magnetic field exposures to the International Commission on Non-Ionising Radiation Protection, Guidelines for limiting exposure to time varying electric, magnetic, fields (1Hz- 100kHz) (Health Physic 99(6):818-836: 2010) (ICNIRP Guidelines). That is the public exposure reference level of 200 μ T for magnetic flux density when measured at 1 metre above ground level directly above any cable under normal operating conditions. (ie, when there are no faults in the transmission system).

3. In order to reduce long-term public exposure to MFs, no habitable buildings shall be constructed within the designated corridor for the underground cable.

Radio frequency

4. All works shall be designed to comply with NZS 6869:2004 Limits and Measurement Methods of Electromagnetic Noise from High-Voltage a.c. Power Systems, 0.15 to 1000 MHz.

Earth potential rise / induced voltages

5. The works shall be designed and constructed to comply with regulations ~~58, 33, 42, 60, 69 and 87~~ and Part 2 General safety requirements, Requirements for electrical safety of the Electricity Regulations ~~1997~~ 2010. ~~as in force at the date of confirmation of the designation~~

6. Any works or equipment shall be designed and constructed so as not to cause existing assets of other utilities to be non-compliant with AS/NZS 4853: 2012 – Electrical Hazard on Metallic Pipelines.

Existing utilities

Auckland Unitary Plan Operative in part

7. Transpower shall liaise with all relevant utility operators during the detailed design and subsequent construction processes prior to undertaking any work pursuant to this designation and shall ensure that:

- a. it is aware of the location of all utility services existing at the time of construction in or adjacent to the designation; if necessary, exploratory excavation shall be undertaken;
- b. to the greatest extent practicable, all utility services existing at ~~28 May 2007~~ [Insert alteration NOR lodgment date] (being the date the Notice of Requirement to alter the designation was lodged) located in or adjacent to the designation are protected from any activity associated with the Upper North Island Grid Upgrade Project which may interfere with the proper functioning of the services;
- c. if it is not practicable to avoid a reduction in the level of service in accordance with (b) above, or if services are otherwise damaged, all utility services existing at ~~28 May 2007~~ [Insert alteration NOR lodgment date] located in or adjacent to the designation are repaired or relocated at Transpower's expense, to the reasonable satisfaction of the affected utility operator; and
- d. ~~reasonable access to~~ existing utility services located in or adjacent to the designation are able to be accessed during construction.

8. Nothing in condition 7(c) requires Transpower to:

- a. provide compensation to any affected utility operator for indirect costs, such as for delays and inconvenience caused; and
- b. put the owner of the utility services in a better position than if the Upper North Island Grid Upgrade Project had not been proposed or installed.

Archaeology: known sites R11/2333 and R11/2384

9. Before any construction works are carried out associated with the Upper North Island Upgrade Project, Transpower shall make any minor adjustments to the location of the cable trench within the corridor to ensure that the sites R11/2333 and R11/2384 are not damaged by construction of the cable trench.

Advice note:

This condition is subject to any conditions of any archaeological authority granted under the Historic Places Act 1993.

Construction Management Plan (CMP)

10. At least 30 working days prior to commencing any construction activity along the designated underground cable route, Transpower shall submit a Construction Management (CMP) to the Council for approval. The Council's Consents Manager shall respond within 20 working days indicating whether approval is given or Transpower's intended approach to:

- a. The proposed construction methodology;
- b. Storage and reuse and top soil, including stockpiling areas;
- c. On-site and off-site disposal of soil;
- d. Silt and dust control, during earthwork stages;
- e. Groundwater and stormwater management, treatment and disposal;
- f. Traffic/property access management;
- g. Contaminated land management procedures;
- h. Construction hours;
- i. Existing network utilities protocols and guidelines;
- j. Access and utilities management;
- k. Subject to other specific conditions, cultural protocols and archaeological requirements;
- l. Land stability management and water quality and sediment controls;
- m. Vegetation disturbance/removal and replacement;
- n. Management of construction activities;
- o. Contractor training, including health and safety;

- p. The intended construction programme, including staging if appropriate;
- q. Management of construction noise;
- r. Community information and liaison;
- s. Temporary activities and equipment storage in specified areas;
- t. Contractor car parking in specified areas;
- u. Security and lighting during construction; and
- v. Situations where the proposed cable depth could differ from the 1500 mm shown on Map 6 or 7 of Appendix V (see attachments), including likely reasons for differing depth and means of resolving any issues arising from that depth.

11. In preparing the CMP in accordance with condition 10, the following minimum requirements shall be met:

- a. Quality soil shall be reused, where appropriate, and suitable stockpiling areas shall be identified;
- b. Spoil which is not reused, where appropriate, and suitable stockpiling areas shall be identified;
- c. Dust on-site shall be minimised to ensure that there is no dust nuisance off-site as a result of the works. Such minimisation could include spraying with water or covering of areas;
- d. Clean stormwater shall be directed away from bare or earthworked areas and sediment laden runoff shall be properly controlled and managed to minimise any discharge of sediments into watercourses;
- e. As far as practicable, disturbance to riparian areas and stream banks and beds shall be minimised during construction;
- f. Measures for testing and removing any contaminated land along the route shall be developed;
- g. Liaison with existing utility providers with underground services within the designated route shall be undertaken;
- h. Adequate measures shall be implemented so as to avoid land slope failure;
- i. When construction is taking place within the dripline of any tree over two metres in height to be retained on a public road or other public or private land, a qualified arborist shall be engaged to advise on the best method of root pruning and for continuing long-term avoidance of root interference with the cable;
- j. Site contractors shall have available at all working times, at an accessible place along the cable route, copies of all designation and consent conditions, the approved Construction Management Plan and the Draft Protocols entitled Transpower Grid Upgrade Project Protocol for Dealing with Kōiwi or Taonga Unearthed During Construction and the Discovery of Sites of Significance, Wāhi Tapu, Heritage Sites and Archaeological Sites (or updated document). Transpower shall ensure that the contractors understand the designation conditions and consent conditions;
- k. Transpower shall notify the Council in writing at least 10 working days before commencing works (including a separate notification for works commencing in Turanga Creek, Mangemangeroa Stream and Otara Creek), and shall notify the Councils that works have been completed within 10 working days following completion of the works;
- l. Parties adjacent to the route shall be notified prior to commencement of works and shall be regularly updated;
- m. Temporary activities, such as equipment storage shall be undertaken in suitably located areas (ie, not within 20 metres of a watercourse);
- n. Contractor car parking shall be suitably located, so as not to prevent property access; and
- o. Work sites shall be secure and illuminated to restrict access as appropriate.

12. In preparing the CMP in accordance with condition 10, ~~Housing New Zealand Corporation~~ Kāinga Ora shall be consulted.

Advice note:

Where the CMP requires Transpower to give notice to the Council, that notice can be given

progressively, as stages of the work are complete.

Construction hours

13. Construction hours shall be as follows:

- a. Monday to Friday: 7am to 6pm;
- b. Saturday: 8am to 1pm; and
- c. Sundays and public holidays: No work.

Except where work is necessary outside the specified days or hours for the following purposes:

- i. Where work is required to be planned to be carried out at low-traffic times, for example, excavation across busy roads, or cable installation;
- ii. Delivery of large equipment;
- iii. Emergencies;
- iv. Securing of the site or removing a traffic hazard;
- v. Cable jointing in self- contained enclosures; or
- vi. Where the distance between the work and the nearest residence is 100 metres or more and all other conditions are met.

Construction and Maintenance Noise

14. All construction work shall be designed, managed and conducted to ensure that construction and maintenance noise from the site does not exceed the limits in NZS6803:1999 Acoustics–Construction Noise.

15. Prior to any significant construction work taking place, a noise management plan shall be prepared, with the assistance of a suitably qualified and experienced person, that sets out the management procedures in terms of section 8 and Annex E of NZS6803:1999, and the works shall be undertaken in accordance with that noise management plan (other than emergency works).

16. The noise management plan required by condition 15 shall be submitted to the Council's Consents Manager for approval, at least 20 working days prior to the works commencing. The Council's Consents Manager shall respond within 20 working days indicating whether approval is given or refused. Approval shall not be unreasonably withheld.

Advice note:

The noise management plan required by condition 15 can be incorporated into, and be part of the construction management plan required by condition 10.

Vibration

17. Vibration from all construction activities shall not exceed the limits of, and shall be measured and assessed in accordance with, German Standard DIN 4150-3 (1999-02) Structural Vibration – Effects of Vibration on Structures.

Traffic / roading

18. Transpower shall prepare a Traffic Management Plan (TMP) which is generally consistent with ~~NZTA's Code of Practice for Temporary Traffic Management (COPTTM)~~. the National Code of Practice for Utility Operators' Access to Transport Corridors under the Utilities Access Act 2010

19. The TMP shall be submitted to the Council's Consents Manager for approval at least 20 working days prior to commencement of underground cable construction after consultation with:

- a. The Council;
- b. The following key stakeholders:
 - i. Emergency services (including police);

- ii. Bus operators;
- iii. Schools;
- iv. ~~Housing New Zealand Corporation~~ Kāinga Ora;
- c. Any additional key stakeholders identified by the Council.

20. The council shall respond within 20 working days indicating whether approval is given or refused. Approval shall not be unreasonably withheld.

21. The TMP prepared by Transpower shall recognise that the paramount purpose of roads is the free passage of the public and its vehicles.

22. The TMP prepared by Transpower shall address and provide details of proposed works and/or mitigation measures relating to the following matters:

- a. The likely routes for heavy construction-related traffic;
- b. Details of any necessary road closures, diversions, or deviations which are likely to be required during construction activities, including the likely date, time and duration of such actions. As far as practicable, any necessary temporary road closures should be effected during off-peak periods;
- c. Where diversions or deviations are required, information and recommendations shall be provided by a suitably qualified and experienced traffic engineer of the traffic volumes and capacities of alternative routes, and the likely consequent effects in terms of safety and convenience. The traffic engineer shall ensure that recommended alternative routes are reasonably convenient and capable of safely accommodating diverted or deviated traffic. Transpower shall act on the recommendations of the traffic engineer in relation to alternative routes. Where traffic modelling related to specific intersections is required, the results of the modelling shall be included (see conditions 23 to 25);
- d. Details of the signage intended to advise motorists, residents, stakeholders, and other road users of any road closures, diversions and delays, including examples of signage for diversion routes. Such signage shall be sufficiently clear to enable easy understanding by the general public, and installed at appropriate locations at least seven days in advance of such road closures, diversions and delays. Such signage shall include the use of trailer-mounted electronic signs near the most affected roads;
- e. Details of methods of proposed information dissemination regarding construction activities and associated traffic effects. These details shall include information regarding likely timing and duration of works, alternative routes, access to properties, and any alterations to public transport services. Methods of information dissemination shall include, but not be limited to, public notices in newspapers, radio announcements, signage, information packages, and direct contact with affected properties along those routes;
- f. Inclusion of a communications plan setting out the method of consultation and liaison with key stakeholders and affected parties regarding likely timing and duration of works, alternative routes, access to properties and any alterations to public transport services;
- g. Details of prior consultation or community liaison undertaken with affected residents, key stakeholders, schools, public transport providers, emergency services or representative groups regarding proposed road closures, diversions and delays, and any measures agreed with such groups to address any adverse effects or inconvenience that may arise;
- h. Details of any measures for the purposes of mitigating adverse traffic effects of construction traffic, including safety matters, relating to cyclists, pedestrians, mobility impaired persons, and school children;
- i. Where the cable is proposed to be installed across major intersections and/or arterial roads carrying higher traffic volumes (such as Ti Rakau Drive, Te Irirangi Drive, Chapel Road, Springs Road, East Tamaki Road), three months prior to the commencement of construction an assessment shall be carried out by a suitably qualified and experienced traffic engineer of:
 - i. The traffic volumes using such intersections or roads;

- ii. The likely levels of delays and disruptions which may be experienced as a result of cable construction; and
- iii. Identification of locations where such installation works must be carried out in the most timely manner practicable (including where reasonably practicable, the use of alternative methods of installation other than trenching), so as to minimise delays or inconvenience to road users;
- j. Following consultation with public transport providers, details of proposed alternative temporary changes to public transport services during the construction period including but not limited to any route diversions, timetable adjustments, temporary bus stops, and methods of communicating such matters to public transport users.

23. Following consultation with the Boards and/or principals of [Mission Heights Primary School](#), Sir Edmund Hillary College and Sancta Maria College (and any schools subsequently established with accesses and/or egresses adjacent to the underground cable route), Transpower shall ensure, as far as practicable, that works avoid school terms so as to minimise disruption to normal school activities. Details of relevant periods shall be included in the TMP.

24. Following consultation with ~~the New Zealand Fire Service~~ [Fire and Emergency New Zealand](#), details shall be provided in the TMP of proposed alternative access to and egress from the fire station located at 341 East Tamaki Road.

25. Transpower shall carry out traffic modelling at the intersections of Johnstones Road/Springs Road/East Tamaki Road and Chapel Road/Accent Drive/Stancombe Road to assess the impact of the construction works on intersection capacity prior to completing the Construction Management Plan and the Traffic Management Plan as required by condition ~~20~~ [18](#), and incorporate any necessary specific provisions in the CMP.

Advice note:

The traffic management plan required by condition 18 can be incorporated into, and be part of, the construction management plan required by condition 10.

Continuation of access

26. Transpower shall at all times ensure that access to any property temporarily severed by construction is maintained at a level that will enable, as far as practicable, normal operations on the property to continue.

Parking

27. Following consultation with residents, businesses and other directly affected persons, Transpower shall ensure that adequate temporary alternative car parking is provided for residents, businesses and other directly affected persons along or adjacent to the cable route, in the event that construction activity prevents or hinders usual parking. Such arrangements are to be made and advised to affected parties at least five working days prior to the commencement of the work that causes the effect.

Remediation of property, roads and footpaths

28. Other than as provided in condition 29, Transpower shall:

- a. within 10 working days of completion of construction on any land, reinstate any private or public land and property (excluding works in road reserves) as far as practicable to its pre-existing state. Such remediation shall include fences, gardens (excluding trees and grass) and other surface equipment or materials; and
- b. as soon as practicable after the completion of construction, re-grass areas that were previously grassed.

29. As soon as practicable after the completion of construction, Transpower shall repair any damage

to public carriageways and footpaths (and associated road components) resulting from the impacts of construction. Such repair may involve short-term maintenance to allow for settling and consolidation of carriageways prior to final repair.

Cultural/Spiritual

30. If any urupā, traditional sites, taonga (significant artefacts), or kōiwi (human remains) are exposed during site works, the following procedures shall apply:

- a. Works in the immediate vicinity of the site that has been exposed shall cease;
- b. The site supervisor shall immediately secure the area in a way that ensures that any remains or artefacts are untouched;
- c. The site supervisor shall notify representatives of relevant tāngata whenua, ~~the New Zealand Historic Places Trust~~ Heritage New Zealand, the Auckland Council and, in the case of human remains, the New Zealand Police; and
- d. The notification in (c) above shall allow such persons being given a reasonable time to record and recover archaeological features discovered before work may recommence on the exposed site.

Future roading

31. Cable installed in the vicinity of the possible future road connections between:

- a. ~~The Redoubt Road extension between Regis Lane~~ Kitenga Road and Ormiston Road ~~(as shown on maps 49-50, Manukau City Council Operation District Plan 2002 (see attachments);~~ and
- b. ~~The possible future road connection between Scenic Drive~~ Redoubt Road and Brownhill Road ~~(as shown on Map 31 of Appendix V (see attachments);~~ shall be buried to a depth that does not prevent construction of those roads due to the presence of the cables, ~~in the locations shown on those plans,~~ in the future.

Advice note

1. Any new works or equipment means those works which were not existing prior to the notification of the Auckland Unitary Plan.

Attachments

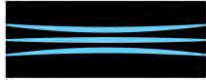
~~Maps from Appendix V of the Board of Inquiry~~
Maps showing the BHL-OTA cable designation area and route
~~Maps 49-50, Manukau City Council Operative District Plan 2002~~

Schedule of Legal Descriptions

Parcel ID	Appellation

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Attachments B
Transpower New Zealand Limited
Decision Letter



TRANSPOWER

Waikoukou
22 Boulcott Street
PO Box 1021
Wellington 6140
New Zealand
P 64 4 495 7000
F 64 4 495 6968
www.transpower.co.nz

22 May 2025

Planning Central/South, Plans and Places
Auckland Council
Level 24, 135 Albert Street
Auckland Central
AUCKLAND 1010

Attention: Jimmy Zhang, Policy Planner, Planning Central and South

*Delivered via email to Jimmy.Zhang@aucklandcouncil.govt.nz
Cc: Craig.Cairncross@aucklandcouncil.govt.nz*

Dear Jimmy,

RE: DECISION BY TRANSPOWER NEW ZEALAND LIMITED PURSUANT TO SECTION 172 OF THE RESOURCE MANAGEMENT ACT 1991 - ALTERATION TO DESIGNATION 8517 BROWNHILL ROAD TO ŌTAHUHU ELECTRICITY TRANSMISSION CABLES

I refer to the recommendation of the Auckland Council ('the Council') received by email on 30 April 2025 in relation to the Notice of Requirement submitted by Transpower New Zealand Limited ('Transpower'), as the requiring authority, for a proposed alteration to Designation 8517 Brownhill Road to Ōtāhuhu Electricity Transmission Cables.

The Council's recommendation was that the Notice of Requirement for an alteration to Designation 8517 should be confirmed, subject to the conditions detailed in Attachments 6 and 7 of its recommendation report.

Pursuant to section 172 of the Resource Management Act 1991, Transpower accepts 'in part' the Council's recommendations in relation to the Notice of Requirement for Designation 8517. The acceptance is 'in part' due to a necessary correction to the Schedule of Legal Descriptions (land parcel information) that was included as part of the conditions recommended by the Council. All other conditions are otherwise accepted as recommended by the Council.

Transpower has proposed a modification to the Schedule of Legal Descriptions appended to the recommended conditions. This modification is solely to correct inaccuracies identified in the originally provided list of land details to which the designation applies, ensuring the accuracy of the designation as it would appear in the Auckland Unitary Plan (Operative in Part) ('AUP').

An updated track-changed version of the Schedule of Legal Descriptions has been attached as **Annexure A**.

A clean version of the amended designation conditions for Designation 8517, reflecting the correction to the Schedule of Legal Descriptions, as they would appear in the AUP, is attached as **Annexure B**.

If you have any queries about this decision, please contact John Sutherland on 03 590 8551 or john.sutherland@transpower.co.nz.

Yours sincerely,

A handwritten signature in blue ink, appearing to read 'Dougall Campbell', with a stylized flourish at the end.

Dougall Campbell
Environmental Policy and Planning Manager
Environmental Policy and Planning Group
TRANSPower NEW ZEALAND LIMITED

Enclosures:

- *Annexure A – Updated track-changed version of agreed amended conditions for Designation 8517*
- *Annexure B – Final clean designation conditions for Designation 8517 as they would appear in the AUP*
- *Annexure C – Auckland Council Recommendation*

Annexure A - Updated track-changed version of Schedule of Legal Descriptions.

Schedule of Legal Descriptions

Parcel ID	Appellation
5074724	Lot 38 DP 122457
4817570	Lot 39 DP 122457
5213395	Road
5168529	Lot 44 DP 122457
4701869	Lot 45 DP 122457
5220406	Road
5245483	Road
5229707	Road
5242071	Road
5234115	Road
5247685	Road
5234114	Road
5253250	Road
5211477	Road
5243048	Road
5235744	Road
5245975	Road
5209287	Road
5259209	Road
5217576	Road
4755221	Allot 355 PSH OF Manurewa
8028879	Section 2 SO 541424
5099005	Reclaimed Crown Foreshore Survey Office Plan 47238
5267324	Hydro
4808525	Lot 279 DP 50344
5214856	Road
5247445	Road
5237621	Road
5247453	Road
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5250436	Road
5228620	Road
5258386	Road
5214767	Road
5214767	Road
7458019	Road
5214015	Road

5255321	Road
5260617	Road
5260621	Road
5260624	Road
5252888	Road
5260631	Road
5260627	Road
5260632	Road
5263411	Road
6746089	Lot 1018 DP 340679
6755102	Lot 1019 DP 348822
6755102	Lot 1019 DP 348822
5263414	Road
5263414	Road
5218750	Road
5247056	Road
5218779	Road
5218779	Road
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5218779	Road
5263064	Road
5225858	Road
5244805	Road
5208695	Road
5208695	Road
6832592	Lot 501 DP 363171
6934723	Lot 503 DP 378310
7350313	Lot 200 DP 445943
6961695	Road
5259436	Road
5210561	Road
5249045	Road
5216198	Road
7060314	Part Allot 205 PSH OF Pakuranga
<u>7103669</u>	<u>Road</u>
<u>7103670</u>	<u>Road</u>
<u>4843013</u>	<u>Section 1 SO 68877</u>
<u>4860015</u>	<u>Lot 1 DP 168092</u>
5216198	Road
7060314	Part Allot 205 PSH OF Pakuranga
5257455	Road
5257455	Road
5208692	Road
5257462	Road
5208693	Road
7781813	Lot 502 DP 507828
7743019	Lot 500 DP 500844
5263387	Road
6841781	Lot 74 DP 353601
7656679	Lot 100 DP 486594

7656682	Lot 301 DP 486594
7656683	Lot 302 DP 486594
7656677	Lot 23 DP 486594

Annexure B – Final clean designation conditions for Designation 8517 as they would appear in the AUP

8517 Brownhill Road to Otahuhu Underground Electricity Transmission Cables

Designation Number	8517
Requiring Authority	Transpower New Zealand Ltd
Location	227 Brownhill Road, Whitford to 26-28 Kaitawa Street, Otara
Rollover Designation	Yes
Legacy Reference	Designation 301, Auckland Council District Plan (Manukau Section) 2002
Lapse Date	1 March 2040

Purpose

Electricity transmission - the construction, operation and maintenance of a double-circuit underground 220kV cable as part of the upper North Island Grid Upgrade Project, to convey electricity between the Otahuhu Substation and the Brownhill Road Substation, and ancillary activities.

Explanatory Note

The nature of the work is described more particularly in Part VII (excluding section 12 in relation to suggested conditions), and also in Parts II and X of the Notices of Requirement Documentation (dated April 2007), and the Notice of Requirement Documentation to alter the designation dated 18 December 2024.

Conditions

Documents

1. The initial works to give effect to the designation of the Brownhill to Otahuhu underground cable shall be generally in accordance with Pages 1-7 of BHL-OTA cable designation area and route (see attachments).

Magnetic Fields (MF)

2. Any new works or equipment shall be designed and operated to limit the magnetic field exposures to the International Commission on Non-Ionising Radiation Protection, Guidelines for limiting exposure to time varying electric, magnetic, fields (1Hz- 100kHz) (Health Physic 99(6):818-836: 2010) (ICNIRP Guidelines). That is the public exposure reference level of 200 μ T for magnetic flux density when measured at 1 metre above ground level directly above any cable under normal operating conditions. (ie, when there are no faults in the transmission system).

3. In order to reduce long-term public exposure to MFs, no habitable buildings shall be constructed within the designated corridor for the underground cable.

Radio frequency

4. All works shall be designed to comply with NZS 6869:2004 Limits and Measurement Methods of Electromagnetic Noise from High-Voltage a.c. Power Systems, 0.15 to 1000 MHz.

Earth potential rise / induced voltages

5. The works shall be designed and constructed to comply with regulations 33, 42 and Part 2 General safety requirements, *Requirements for electrical safety* of the Electricity Regulations 2010.

6. Any works or equipment shall be designed and constructed so as not to cause existing assets of other utilities to be non-compliant with AS/NZS 4853: 2012 – Electrical Hazard on Metallic Pipelines.

Existing utilities

7. Transpower shall liaise with all relevant utility operators during the detailed design and subsequent construction processes prior to undertaking any work pursuant to this designation and shall ensure that:

- a. it is aware of the location of all utility services existing at the time of construction in or adjacent to the designation; if necessary, exploratory excavation shall be undertaken;
- b. to the greatest extent practicable, all utility services existing at 18 December 2024 (being the date the Notice of Requirement to alter the designation was lodged) located in or adjacent to the designation are protected from any activity associated with the Upper North Island Grid Upgrade Project which may interfere with the proper functioning of the services;
- c. if it is not practicable to avoid a reduction in the level of service in accordance with (b) above, or if services are otherwise damaged, all utility services existing at 18 December 2024 located in or adjacent to the designation are repaired or relocated at Transpower's expense, to the reasonable satisfaction of the affected utility operator; and
- d. existing utility services located in or adjacent to the designation are able to be accessed during construction, and
- e. where directional drilling crosses any public stormwater network asset, CCTV of the asset must be submitted to the asset owner at the completion of the project.

8. Nothing in condition 7(c) requires Transpower to:

- a. provide compensation to any affected utility operator for indirect costs, such as for delays and inconvenience caused; and
- b. put the owner of the utility services in a better position than if the Upper North Island Grid Upgrade Project had not been proposed or installed.

Archaeology: known sites R11/2333 and R11/2384

9. Prior to construction works commencing, an HNZPT archaeological authority should be applied for to undertake works on East Tāmaki Road. The remainder of the works should take place under the Auckland Unitary Plan Accidental Discovery Rule (Chapter E11.6.1 and E12.6.1).

Advice note:

This condition is subject to any conditions of any archaeological authority granted under the Heritage New Zealand Pouhere Taonga Act 2014.

Construction Management Plan (CMP)

10. At least 30 working days prior to commencing any construction activity along the designated underground cable route, Transpower shall submit a Construction Management (CMP) to the Council for approval. The Council's Manager, Resource Consents South shall respond within 20 working days indicating whether approval is given or Transpower's intended approach to:

- a. The proposed construction methodology;
- b. Storage and reuse and top soil, including stockpiling areas;
- c. On-site and off-site disposal of soil;
- d. Silt and dust control, during earthwork stages;
- e. Groundwater and stormwater management, treatment and disposal;

- f. Traffic/property access management;
- g. Contaminated land management procedures;
- h. Construction hours;
- i. Existing network utilities protocols and guidelines;
- j. Access and utilities management;
- k. Subject to other specific conditions, cultural protocols and archaeological requirements including any necessary management protocols to ensure the protection of the dry stone walls of Hampton Park/St John Church (AUP ID 1343) during construction associated with the new designation route along East Tamaki Road;
- l. Land stability management and water quality and sediment controls;
- m. Vegetation disturbance/removal and replacement;
- n. Management of construction activities;
- o. Contractor training, including health and safety;
- p. The intended construction programme, including staging if appropriate.
- q. Management of construction noise;
- r. Community information and liaison;
- s. Temporary activities and equipment storage in specified areas;
- t. Contractor car parking in specified areas;
- u. Security and lighting during construction; and
- v. Situations where the proposed cable depth could differ from the 1500 mm shown on Drawing TP203722 For 220kV 1C*2500sqmm Cable System Typical Trench Drawing Sheet 1 (see attachments) including likely reasons for differing depth and means of resolving any issues arising from that depth.

11. In preparing the CMP in accordance with condition 10, the following minimum requirements shall be met:

- a. Quality soil shall be reused, where appropriate, and suitable stockpiling areas shall be identified;
- b. Spoil which is not reused, where appropriate, and suitable stockpiling areas shall be identified;
- c. Dust on-site shall be minimised to ensure that there is no dust nuisance off-site as a result of the works. Such minimisation could include spraying with water or covering of areas;
- d. Clean stormwater shall be directed away from bare or earthworked areas and sediment laden runoff shall be properly controlled and managed to minimise any discharge of sediments into watercourses;
- e. As far as practicable, disturbance to riparian areas and stream banks and beds shall be minimised during construction;
- f. Measures for testing and removing any contaminated land along the route shall be developed;
- g. Liaison with existing utility providers with underground services within the designated route shall be undertaken;
- h. Adequate measures shall be implemented so as to avoid land slope failure;
- i. When construction is taking place within the dripline of any tree over two metres in height to be retained on a public road or other public or private land, a qualified arborist shall be engaged to advise on the best method of root pruning and for continuing long-term avoidance of root interference with the cable;
- j. Site contractors shall have available at all working times, at an accessible place along the cable route, copies of all designation and consent conditions, the approved Construction Management Plan and the Draft Protocols entitled Transpower Grid Upgrade Project Protocol for Dealing with Kōiwi or Taonga Unearthed During Construction and the Discovery of Sites of Significance, Wāhi

Tapu, Heritage Sites and Archaeological Sites (or updated document). Transpower shall ensure that the contractors understand the designation conditions and consent conditions;

k. Transpower shall notify the Council in writing at least 10 working days before commencing works (including a separate notification for works commencing in Turanga Creek and Otara Creek), and shall notify the Councils that works have been completed within 10 working days following completion of the works;

l. Parties adjacent to the route shall be notified prior to commencement of works and shall be regularly updated;

m. Temporary activities, such as equipment storage shall be undertaken in suitably located areas (ie, not within 20 metres of a watercourse);

n. Contractor car parking shall be suitably located, so as not to prevent property access; and

o. Work sites shall be secure and illuminated to restrict access as appropriate.

12. In preparing the CMP in accordance with condition 10, Kāinga Ora shall be consulted.

Advice note:

Where the CMP requires Transpower to give notice to the Council, that notice can be given progressively, as stages of the work are complete.

Construction hours

13. Construction hours shall be as follows:

a. Monday to Friday: 7am to 6pm;

b. Saturday: 8am to 1pm; and

c. Sundays and public holidays: No work. Except where work is necessary outside the specified days or hours for the following purposes:

i. Where work is required to be planned to be carried out at low-traffic times, for example, excavation across busy roads, or cable installation;

ii. Delivery of large equipment;

iii. Emergencies;

iv. Securing of the site or removing a traffic hazard;

v. Cable jointing in self-contained enclosures; or

vi. Where the distance between the work and the nearest residence is 100 metres or more and all other conditions are met.

Construction and Maintenance Noise

14. The noise from any construction work activity must be measured, assessed, and managed in accordance with the requirements of NZS6803:1999 Acoustics–Construction Noise. Construction work is defined in New Zealand Standard NZS6803:1999 Acoustics – Construction noise.

15. A Construction Noise and Vibration Management Plan (CNVMP) must be submitted to Auckland Council for certification prior to commencement of any construction works that cannot comply with the guideline upper limits of New Zealand Standard NZS6803:1999 Acoustics–Construction Noise. The objective of the CNVMP is to identify and require the adoption of the best practicable option to minimise construction noise and vibration effects as far as practical.

16. The CNVMP required by condition 15 must be submitted to the Council's Consents Manager, Resource Consents South, for certification a minimum of twenty (20) working days prior to commencement of the works. Construction works must not commence until certification has been received in writing from the Council. Certification must not be unreasonably withheld.

Advice note:

The CNVMP required by condition 15 can be incorporated into, and be part of the construction management plan required by condition 10.

Vibration

17. Vibration from all construction activities shall not exceed the limits of, and shall be measured and assessed in accordance with, German Standard DIN 4150-3 (1999-02) Structural Vibration – Effects of Vibration on Structures.

Traffic / roading

18. Transpower shall prepare a Traffic Management Plan (TMP) which is generally consistent with *the National Code of Practice for Utility Operators' Access to Transport Corridors* under the Utilities Access Act 2010.

19. The TMP shall be submitted to the Council's Manager, Resource Consents South for approval at least 20 working days prior to commencement of underground cable construction after consultation with:

- a. The Council;
- b. The following key stakeholders:
 - i. Emergency services (including police);
 - ii. Bus operators;
 - iii. Schools;
 - iv. Kāinga Ora;
- c. Any additional key stakeholders identified by the Council.

20. The council shall respond within 20 working days indicating whether approval is given or refused. Approval shall not be unreasonably withheld.

21. The TMP prepared by Transpower shall recognise that the paramount purpose of roads is the free passage of the public and its vehicles.

22. The TMP prepared by Transpower shall address and provide details of proposed works and/or mitigation measures relating to the following matters:

- a. The likely routes for heavy construction-related traffic, the assignment of which should minimise uncontrolled right turn movements and maximise the use of the arterial road network;
- b. Details of any necessary road closures, diversions, or deviations which are likely to be required during construction activities, including the likely date, time and duration of such actions. As far as practicable, any necessary temporary road closures should be effected during off-peak periods;
- c. Where diversions or deviations are required, information and recommendations shall be provided by a suitably qualified and experienced traffic engineer of the traffic volumes and capacities of alternative routes, and the likely consequent effects in terms of safety and convenience. The traffic engineer shall ensure that recommended alternative routes are reasonably convenient and capable of safely accommodating diverted or deviated traffic. Transpower shall act on the recommendations of the traffic engineer in relation to alternative routes. Where traffic modelling related to specific intersections is required, the results of the modelling shall be included (see conditions 23 to 25);
- d. Details of the signage intended to advise motorists, residents, stakeholders, and other road users of any road closures, diversions and delays, including examples of signage for diversion

routes. Such signage shall be sufficiently clear to enable easy understanding by the general public, and installed at appropriate locations at least seven days in advance of such road closures, diversions and

delays. Such signage shall include the use of trailer-mounted electronic signs near the most affected roads;

e. Details of methods of proposed information dissemination regarding construction activities and associated traffic effects. These details shall include information regarding likely timing and duration of works, alternative routes, access to properties, and any alterations to public transport services. Methods of information dissemination shall include, but not be limited to, public notices in newspapers, radio announcements, signage, information packages, and direct contact with affected properties along those routes;

f. Inclusion of a communications plan setting out the method of consultation and liaison with key stakeholders and affected parties regarding likely timing and duration of works, alternative routes, access to properties and any alterations to public transport services;

g. Details of prior consultation or community liaison undertaken with affected residents, key stakeholders, schools, public transport providers, emergency services or representative groups regarding proposed road closures, diversions, delays, on street parking changes and any measures agreed with such groups to address any adverse effects or inconvenience that may arise;

h. Any road diversions, closures, or single lane closures outside Mission Heights Primary School and Mission Heights Junior College must be undertaken, as far as practical, during school holidays or outside school hours.

i. Details of any measures for the purposes of mitigating adverse traffic effects of construction traffic, including safety matters, relating to cyclists, pedestrians, mobility impaired persons, and school children;

j. Where the cable is proposed to be installed across major intersections and/or arterial roads carrying higher traffic volumes (such as Ti Rakau Drive, Te Irirangi Drive, Chapel Road, Springs Road, East Tamaki Road), three months prior to the commencement of construction an assessment shall be carried out by a suitably qualified and experienced traffic engineer of:

- i. The traffic volumes using such intersections or roads;
- ii. The likely levels of delays and disruptions which may be experienced as a result of cable construction; and
- iii. Identification of locations where such installation works must be carried out in the most timely manner practicable (including where reasonably practicable, the use of alternative methods of installation other than trenching), so as to minimise delays or inconvenience to road users;

k. How heavy vehicles must avoid travelling past Mission Heights Primary School and Mission Heights Junior College during peak before and after school travel times, during term time (8.00am to 8.45am and 3.00pm to 3.30pm). Heavy vehicles are classified by size, being any construction vehicle that is larger than the average ute or van and has the potential to reduce visibility on the road.

l. Details of how truck drivers will be briefed on the importance of slowing down and adhering to established speed limits when driving past schools, and to look out for school children and reversing vehicles at all times.

m. Following consultation with public transport providers, details of proposed alternative temporary changes to public transport services during the construction period including but not limited to any route diversions, timetable adjustments, temporary bus stops, and methods of communicating such matters to public transport users.

23. Following consultation with the Boards and/or principals of Mission Heights Primary School, Mission Heights Junior College, Sir Edmund Hillary College and Sancta Maria College (and any schools subsequently established with accesses and/or egresses adjacent to the underground

cable route), Transpower shall ensure, as far as practicable, that works avoid school terms so as to minimise disruption to normal school activities. Details of relevant periods shall be included in the TMP.

24. Following consultation with Fire and Emergency New Zealand, details shall be provided in the TMP of proposed alternative access to and egress from the fire station located at 341 East Tamaki Road.

25. Transpower shall carry out traffic modelling at the intersections of Johnstones Road/Springs Road/East Tamaki Road and Chapel Road/Accent Drive/Stacombe Road to assess the impact of the construction works on intersection capacity prior to completing the Construction Management Plan and the Traffic Management Plan as required by conditions 10 and 18, and incorporate any necessary specific provisions in the CMP.

Advice note:

The traffic management plan required by condition 18 can be incorporated into, and be part of, the construction management plan required by condition 10.

Continuation of access

26. Transpower shall at all times ensure that access to any property temporarily severed by construction is maintained at a level that will enable, as far as practicable, normal operations on the property to continue.

Parking

27. Following consultation with residents, businesses and other directly affected persons, Transpower shall ensure that adequate temporary alternative car parking is provided for residents, businesses and other directly affected persons along or adjacent to the cable route, in the event that construction activity prevents or hinders usual parking. Such arrangements are to be made and advised to affected parties at least five working days prior to the commencement of the work that causes the effect.

Remediation of property, roads and footpaths

28. Other than as provided in condition 29, Transpower shall:

- a. within 10 working days of completion of construction on any land, reinstate any private or public land and property (excluding works in road reserves) as far as practicable to its pre-existing state. Such remediation shall include fences, gardens (excluding trees and grass) and other surface equipment or materials; and
- b. as soon as practicable after the completion of construction, re-grass areas that were previously grassed.

29. As soon as practicable after the completion of construction, Transpower shall repair any damage to public carriageways, footpaths (and associated road components) and public transport corridors resulting from the impacts of construction. Such repair may involve short-term maintenance to allow for settling and consolidation of carriageways prior to final repair.

Cultural/Spiritual

30. If any urupā, traditional sites, taonga (significant artefacts), or kōiwi (human remains) are exposed during site works, the following procedures shall apply:

- a. Works in the immediate vicinity of the site that has been exposed shall cease;
- b. The site supervisor shall immediately secure the area in a way that ensures that any remains or artefacts are untouched;

- c. The site supervisor shall notify representatives of relevant tāngata whenua, Heritage New Zealand, the Auckland Council and, in the case of human remains, the New Zealand Police; and
- d. The notification in (c) above shall allow such persons being given a reasonable time to record and recover archaeological features discovered before work may recommence on the exposed site.

Post-construction

31. Transpower will, as soon as practicable following completion of the cable works:

- a. Review the width of the area designated for the project; and
- b. Identify any areas of designated land that are no longer necessary for the on-going operation, maintenance, renewal and protection of the underground cables and ancillary activities; and
- c. Remove the designation over any surplus areas identified in (b) above in accordance with section 182 of the Act and provide a plan of the final designated areas to the Council for inclusion in the Auckland Unitary Plan.

Future roading

32. Cable installed in the vicinity of the possible future road connections between:

- a. Kitenga Road and Ormiston Road; and
- b. Redoubt Road and Brownhill Road;

shall be buried to a depth that does not prevent construction of those roads due to the presence of the cables in the future.

Auckland Transport

33. The Requiring Authority (Transpower) shall not require Auckland Transport to seek written consent under Section 176(1)(b) of the RMA for the following activities associated with the routine operation, maintenance, replacement and urgent repair of its roads and Bus Rapid Transit:

- a. Road marking; and
- b. Road resurfacing and repairs, and replacement kerb and channel, with excavations less than 500mm in depth; and
- c. Installation or reinstallation of signs and support posts with excavations less than 500mm in depth.

Advice notes:

- 1. Any new works or equipment means those works which were not existing prior to the notification of the Auckland Unitary Plan.
- 2. Where the Transpower BHL-OTA designation and the Auckland Transport Bus Rapid Transit – Botany to Rongomai Park designation overlap at the intersection of Ti Irirangi Drive and Accent Drive, during the construction of the earlier project at this location, Transpower and Auckland Transport will endeavour to align timing of construction activities where practicable to minimise the disturbance of the earlier project's operation when construction for the later project occurs.

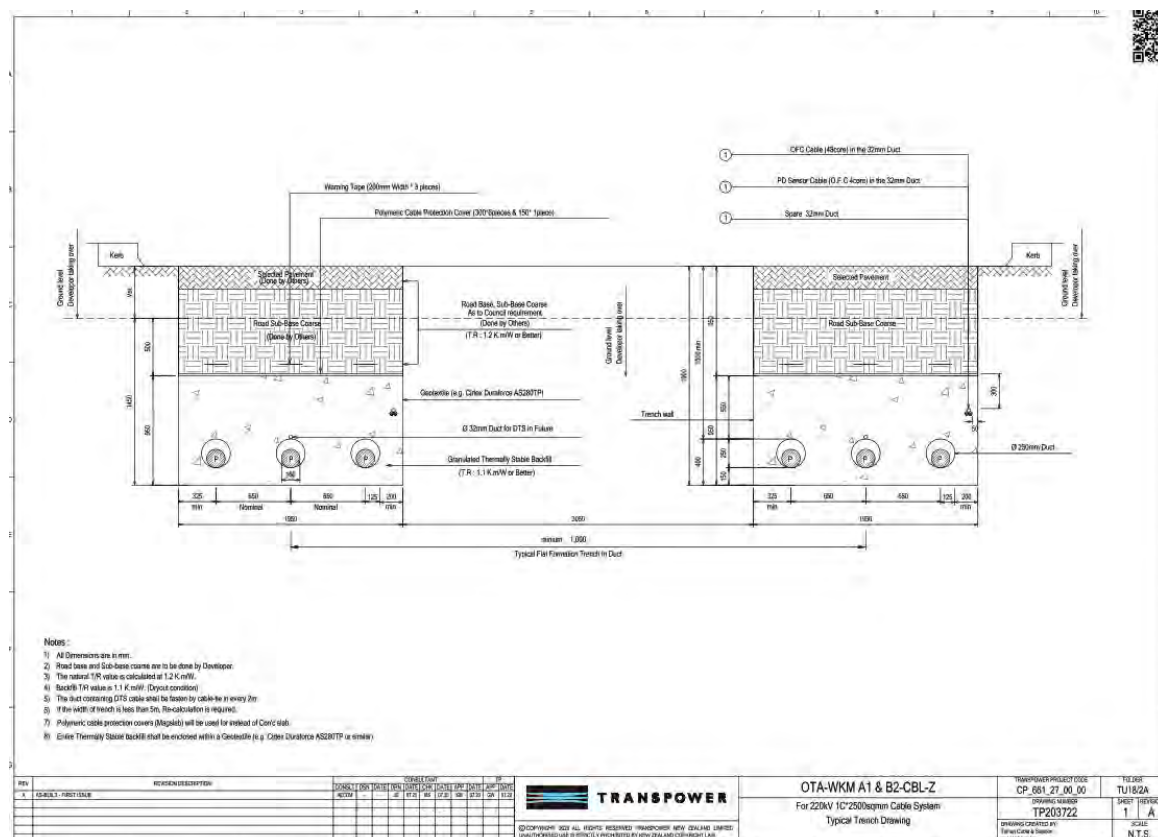
Attachments

Drawing TP203722 Typical Trench Drawing Sheet 1

Maps 1-7, BHL-OTA cable designation area and route

INDEX OF PLANS REFERRED TO IN DESIGNATION CONDITIONS

PLAN	PLAN DESCRIPTION	SHEET
TP203722	For 220kV 1C*2500sqmm Cable System Typical Trench Drawing	1



INDEX OF MAPS REFERRED TO IN DESIGNATION CONDITIONS

MAP DESCRIPTION	SHEET
BHL-OTA CABLE DESIGNATION AREA AND ROUTE	PAGE 1 OF 7
BHL-OTA CABLE DESIGNATION AREA AND ROUTE	PAGE 2 OF 7
BHL-OTA CABLE DESIGNATION AREA AND ROUTE	PAGE 3 OF 7
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BHL-OTA CABLE DESIGNATION AREA AND ROUTE	PAGE 5 OF 7
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Legend
BHL-OTA Cable Designation Area and Route
Parcel boundary

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BHL-OTA Cable Designation Area and Route

0 100 200 300 Meters

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Legend
BHL-OTA Cable Designation Area and Route
Parcel boundary

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BHL-OTA Cable Designation Area and Route

0 100 200 300 Meters

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Legend

- BHL-OTA Cable Designation Area and Route
- Parcel boundary

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BHL-OTA Cable Designation Area and Route

0 100 200 300 Meters

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- BHL-OTA Cable Designation Area and Route
- Parcel boundary

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BHL-OTA Cable Designation Area and Route

0 100 200 300 Meters

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Legend

BHL-OTA Cable Designation Area and Route
Parcel boundary

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BHL-OTA Cable Designation Area and Route



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Legend

BHL-OTA Cable Designation Area and Route
Parcel boundary

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BHL-OTA Cable Designation Area and Route



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Date: 12/06/2024 Drawn by: aldrich



Schedule of Legal Descriptions

Parcel ID	Appellation
5074724	Lot 38 DP 122457
4817570	Lot 39 DP 122457
5213395	Road
5168529	Lot 44 DP 122457
4701869	Lot 45 DP 122457
5220406	Road
5245483	Road
5229707	Road
5242071	Road
5234115	Road
5247685	Road
5234114	Road
5253250	Road
5211477	Road
5243048	Road
5235744	Road
5245975	Road
5209287	Road
5259209	Road
5217576	Road
4755221	Allot 355 PSH OF Manurewa
8028879	Section 2 SO 541424
5099005	Reclaimed Crown Foreshore Survey Office Plan 47238
5267324	Hydro

4808525	Lot 279 DP 50344
5214856	Road
5247445	Road
5237621	Road
5247453	Road
5208934	Road
5247449	Road
5210416	Road
5245707	Road
5206109	Road
5256686	Road
5215068	Road
5248339	Road
5213926	Road
5250436	Road
5228620	Road
5258386	Road
5214767	Road
5214767	Road
7458019	Road
5214015	Road
5255321	Road
5260617	Road
5260621	Road
5260624	Road
5252888	Road
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7103670	Road
4843013	Section 1 SO 68877
4860015	Lot 1 DP 168092
5216198	Road
7060314	Part Allot 205 PSH OF Pakuranga
5257455	Road
5208692	Road
5257462	Road
5208693	Road

7781813	Lot 502 DP 507828
7743019	Lot 500 DP 500844
5263387	Road

Annexure C – Auckland Council Recommendation

30 April 2025

Transpower New Zealand Limited
C/- John Sutherland
31 Gilberthorpes Road, Islington, Christchurch

By email: john.sutherland@transpower.co.nz

Dear John

AUCKLAND COUNCIL UNITARY PLAN

Notice of Requirement for a minor alteration to a designation under section 181(3) and a partial removal of designation under section 182 of the Resource Management Act 1991 (RMA) to designation 8517 Brownhill – Ōtāhuhu Underground Electricity Transmission Cables [BHL-OTA] from 227 Brownhill Road, Whitford to 26-28 Kaitawa Street, Ōtara.

Enclosed is a copy of Auckland Council's decision to accept the alteration of designation 8517 under section 181(3) and to remove part of the designation under section 182 of the Act, as proposed by Transpower.

Please contact myself (Jimmy.Zhang@aucklandcouncil.govt.nz) or Craig Cairncross (Craig.Cairncross@aucklandcouncil.govt.nz) should you have any questions.

Yours faithfully



Jimmy Zhang
Senior Policy Planner
Planning – Central/South
Planning and Resource Consents
Auckland Council

Tel: 021 0264 2308

Notice of requirement for a minor alteration to a designation under section 181(3) and a partial removal of designation under section 182 of the Resource Management Act 1991

Notice of requirement description

Designation number:	8517
Requiring authority:	Transpower New Zealand Limited
Site address:	227 Brownhill Road, Whitford to 26-28 Kaitawa Street, Ōtara.

Summary

Auckland Council has received Notices of Requirement (**NoRs** or **Notices**) from Transpower NZ Limited [**Transpower**] for the alteration of Designation 8517 under s181(3) and the partial removal of an area of Designation 8517 under s182 of the Resource Management Act 1991 (RMA). The two NoRs are:

- Minor alteration to Designation 8517 Brownhill – Ōtāhuhu Underground Electricity Transmission Cables [**BHL-OTA**] dated 8 October 2024
- Partial removal of Designation 8517 Brownhill – Ōtāhuhu Underground Electricity Transmission Cables [**BHL-OTA**] dated 18 December 2024 and updated 13 February 2025

The Brownhill to Ōtāhuhu (BHL-OTA) designation protects an underground cable route between the Brownhill Road substation and the Ōtāhuhu substation in South Auckland.

The purpose of the designation is for “the construction, operation and maintenance of a double-circuit underground 220kV cable as part of the upper North Island Grid Upgrade Project, to convey electricity between the Ōtāhuhu Substation and the substation site at Brownhill Road, and ancillary activities.’

The cables have not yet been installed and development in the local areas has occurred since the designation was confirmed in 2009.

Notices have been sought because minor changes to the designation route “would be advantageous to better align the designation with the development pattern in the area” and would follow roads.

A minor alteration under s181(3) is proposed to alter the designation, adjust the designation boundaries and update the conditions. The second stage is to remove the areas of the existing designation from land which is no longer required under s182 [a partial removal of the designation].

It is considered that after undertaking an assessment of the NoR, that:

- The proposed alteration meets the statutory tests of section 181(3) of the RMA, and can therefore be processed as a minor alteration, because:
 - the alteration involves no more than minor changes to the effects on the environment associated with the use of the land;
 - there are minor adjustments to the boundaries of the existing designation;
 - both the requiring authority and Auckland Council agree with the alteration; and
 - Transpower holds easements in perpetuity over-all privately-owned land along the designated route.
- Pursuant to s182 the effect of the partial removal of part of designation 8517 has been considered against the tests of s182. Auckland Council considers that the effects of the removal of part of Designation 8517 on the remaining designation are no more than minor and the Auckland Unitary Plan can be amended accordingly.

This combined report has been structured into two parts:

- Part 1: Minor alterations pursuant to s181(3) RMA (page 3 onwards)
- Part 2: Partial removal of the designation pursuant to s182 RMA (page 25 onwards)

Recommendations

1. That the proposed minor alteration of Designation 8517 within the Auckland Unitary Plan be confirmed, subject to the conditions recommended in attachments to Part 1 of this report.
2. That the partial removal of Designation 8517 Brownhill – Ōtāhuhu Underground Transmission Cables in the Auckland Unitary Plan be accepted and the Auckland Unitary Plan can be amended in accordance with s182.
3. That Designation 8517 is amended in Chapter K Designations in the Auckland Unitary Plan.
4. That Designation 8517 is partially removed in the designations layer of the AUP planning maps and Chapter K Designations in the Auckland Unitary Plan.

SCHEDULE OF ATTACHMENTS

Attachment 1	<p>Transpower New Zealand Limited Notice of Requirement for alterations to Designation #8517 under s181(3) (and Appendices 1-9):</p> <p>U:\CPO\RLP\FC\LUP\UP MODIFICATIONS\DESIGNATIONS\8517BrownhillRdtoOtahuhusubstation\Designation8517 Attachments\Attachment 1</p>
Attachment 2	<p>Request for further information and Transpower's response for alterations to Designation #8517 (and attachments):</p> <p>U:\CPO\RLP\FC\LUP\UP MODIFICATIONS\DESIGNATIONS\8517BrownhillRdtoOtahuhusubstation\Designation 8517 Attachments\Attachment 2</p>
Attachment 3	<p>Transpower New Zealand Limited Notice of Requirement for partial removal to Designation #8517 under s182 (and attachments):</p> <p>U:\CPO\RLP\FC\LUP\UP MODIFICATIONS\DESIGNATIONS\8517BrownhillRdtoOtahuhusubstation\Designation 8517 Attachments\Attachment 3</p>
Attachment 4	<p>Request for further information and Transpower's response for partial removal to Designation #8517 (and attachments):</p> <p>U:\CPO\RLP\FC\LUP\UP MODIFICATIONS\DESIGNATIONS\8517BrownhillRdtoOtahuhusubstation\Designation 8517 Attachments\Attachment 4</p>
Attachment 5	<p>Auckland Council Specialist memos and feedback for alterations to and partial removal of Designation #8517</p> <p>U:\CPO\RLP\FC\LUP\UP MODIFICATIONS\DESIGNATIONS\8517BrownhillRdtoOtahuhusubstation\Designation8517 Attachments\Attachment 5</p>
Attachment 6	<p>Conditions (track change)</p> <p>U:\CPO\RLP\FC\LUP\UP MODIFICATIONS\DESIGNATIONS\8517BrownhillRdtoOtahuhusubstation\Designation8517 Attachments\Attachment 6</p>
Attachment 7	<p>Agreed set of conditions (clean)</p> <p>U:\CPO\RLP\FC\LUP\UP MODIFICATIONS\DESIGNATIONS\8517BrownhillRdtoOtahuhusubstation\Designation8517 Attachments\Attachment 7</p>
Attachment 8	<p>Email from Transpower re agreement to conditions</p> <p>U:\CPO\RLP\FC\LUP\UP MODIFICATIONS\DESIGNATIONS\8517BrownhillRdtoOtahuhusubstation\Designation8517 Attachments\Attachment 8</p>

PART 1: MINOR ALTERATIONS PURSUANT TO Section 181(3) Resource Management Act 1991

1. Background

1.1. Minor alteration to a designation

Auckland Council has received a request from Transpower for an alteration to the Brownhill Road to Ōtāhuhu (BHL-OTA) Underground Transmission Cables Designation 8517 under section 181(3) of the RMA.

The minor alteration to Designation 8517 has been requested because although the cables have not yet been installed, development in the area around the designation route has occurred since the designation was confirmed in 2009.

Transpower have therefore reviewed the route and advises that it would be “advantageous to better align the designation with the development pattern in the area [ideally the designated route would follow roads]”. Transpower advise that this would “make the construction, operation and maintenance of the cables more efficient”. As such, this minor alteration proposes to:

- Amend the route to include two additional areas:
 - (i) at the beginning of the route at 359 East Tamaki Road, along East Tamaki Road to its intersection with Accent Drive, then along Accent Drive to the area around the intersection of Chapel Road and Stancombe Road
 - (ii) apply the designation route within the Stancombe Road corridor between its intersections with Chapel Road and Kensway Drive, adjacent Barry Curtis Park.
- Amend seventeen [17] conditions including updates to correct minor errors to conditions [cross references, updated names of organisations, document names etc], and includes two new conditions.

The existing designation route and the proposed changes are shown in Figures 1, 2 and 3 below and are described in more detail in Section 1.3 of this report.

1.2. History of the designation

Transpower’s Designation 8517 was confirmed in September 2009. At the time the NoR was submitted in 2007, Transpower noted that the environment surrounding the route was largely open rural or semi-rural land. The environment now has notably changed, with urban uses now spanning much of the area surrounding the designated route. With the prevalent development pattern largely settled, Transpower is now seeking to reduce environmental effects and increase efficiency of the works through an alteration to the designated route. By way of context, recent alterations to Designation 8517 involve the following:

- In December 2024, Transpower applied for an extension of 15 years to the lapse

date of Designation 8517 to allow for greater flexibility and to enable Transpower to adapt to changing circumstances. An extension from 1 March 2025 to 1 March 2040 was approved on 20 January 2025 with the AUP updated on 14 February 2025 to reflect the new lapse date.

- ♦ In November 2017, an alteration to Designation 8517 was approved to align the existing designation with a consented alignment of Springhill Road in Flat Bush where it joins Redoubt Road, under s172 of the RMA. This related to the mapped extent of the designation only and there were no changes to the existing designation conditions. This alteration removed part of the designation from the sites at 1 and 4 Springhill Road and 2 Haraheke Terrace and altered the designation route so that it would remain within the Springhill Road alignment.

1.3. Land affected by the alteration.

Designation 8517 links the Ōtāhuhu Substation on Gridco Road, Ōtara [Designation 8513¹] with the Brownhill Substation site to the eastern end at Kitenga Road and along Springhill Road where it meets Designation 8515².

The designated area covers approx. 20.2 ha along the total route. The existing designation is subject to 31 conditions [and advice notes] which address matters such as magnetic fields, compliance with Electricity Regulations, existing utilities, a Construction Management Plan [CMP], construction and maintenance noise, traffic plans, remediation of property, roads and footpaths and future roading, and cultural matters.

The existing designation traverses land owned or administered by Auckland Transport [AT], Auckland Council [Land Advisory Services within Parks and Community Facilities Department] and two private landowners for 2 Haraheke Terrace, 4 Springhill Road and 227 Brownhill Road in Whitford and 542 Ormiston Road.

The extent of the existing designation area and route and the proposed additional areas to be designated are included in Appendix 2 of the lodged NoR documents and are shown in Figures 1, 2 and Figure 3 below.

¹ The purpose of designation 8513 is Electricity transmission – the operation, maintenance and upgrade of the existing Otahuhu Substation, the construction of a new 220kV substation, installation of 220kV underground cable circuits and associated works as part of the upper North Island Grid Upgrade Project, works associated with other projects and ancillary activities.

² The purpose of 8515 is Electricity transmission- the construction, operation and maintenance of a transition station to connect the underground cable and overhead lines section of the upper North Island Grid Upgrade Project, including Tower 5 of the overhead line and additional support structures, and parts of the underground cables connecting with Pakuranga and Otahuhu Substations.

Figure 1: Location and extent of existing Designation 8517

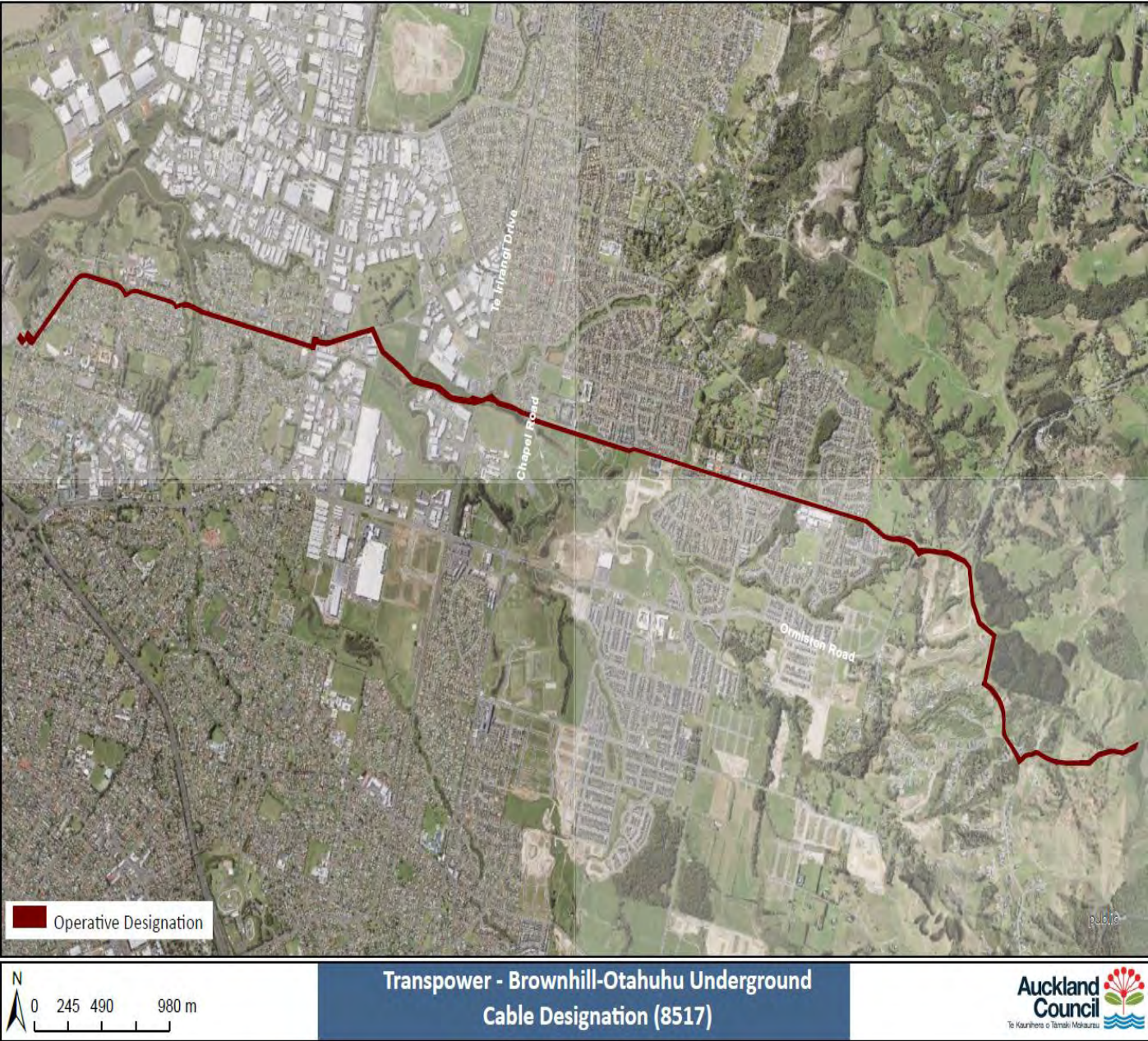


Figure 2 – Proposed amendments to existing designation

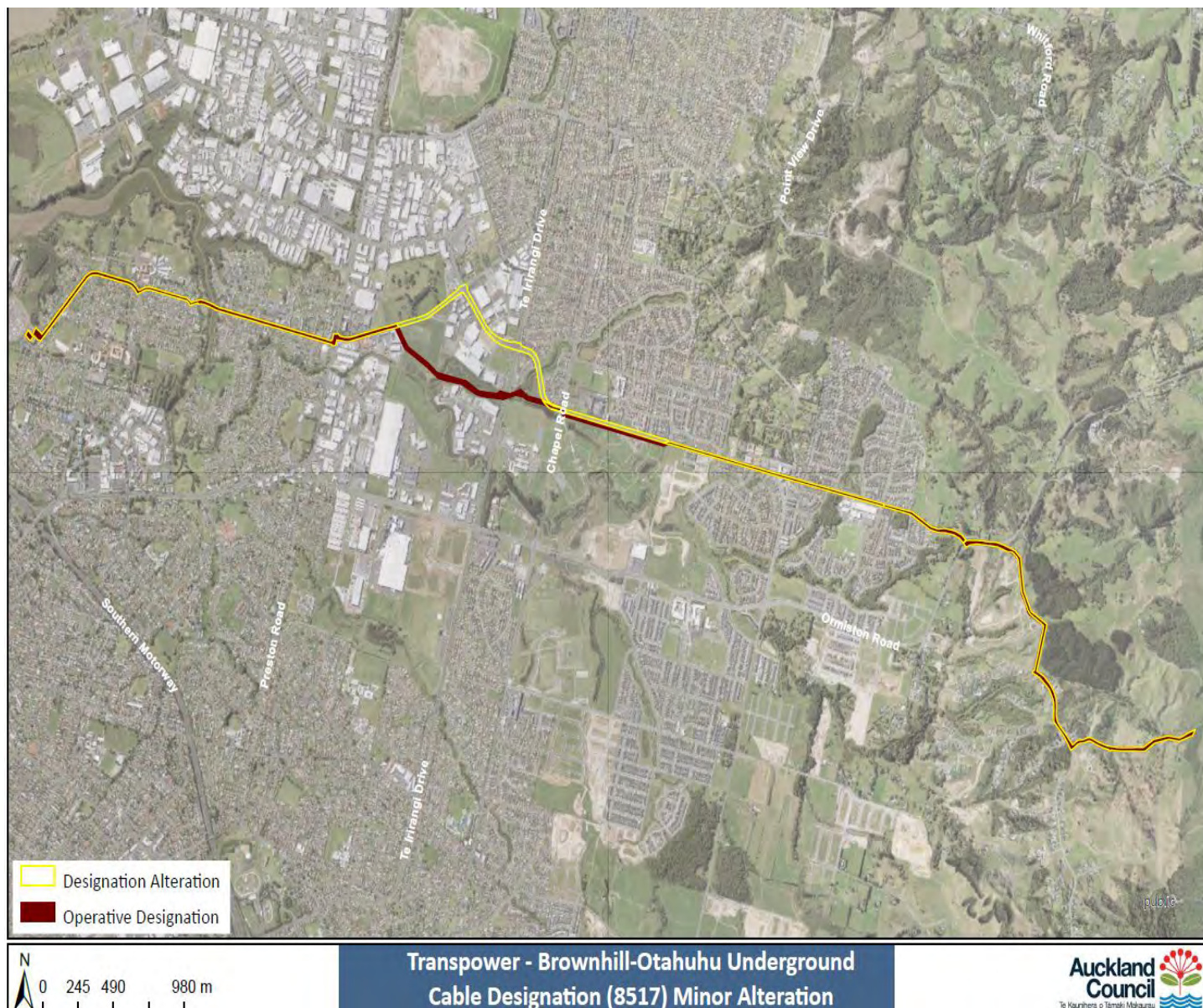


Figure 3 - Detailed map of areas to be altered - around Accent Drive, East Tamaki Road and Stancombe Road [Barry Curtis Park]



1.4. Description of the site and existing environment

The existing designation route is described in full in section 3.1 of the RA's Assessment of Environmental Effects [AEE] [see Attachment 1] and shown as designation and route plans in Appendix 2 attached to the documents lodged as part of the NoR. The existing designation route is briefly summarised below.

- From the Ōtāhuhu Substation [Designation #8513] the designation follows several roads until 359 East Tamaki Road,
- the designation then continues southeast crossing Te Puke o Tara Sports Park and the adjacent reserve and the Sancta Maria stormwater ponds,
- the designation then rejoins the road until the eastern side of Chapel Road, where it continues parallel to the southern side of Barry Curtis Park, and follows roads to the end where it intersects with the Brownhill Substation [Designation #8515].

Section 3.1 of the RA's AEE notes that the areas in the west comprise mainly suburban residential development with some commercial/industrial areas, reserves [recreational areas] and schools. At the eastern end, the area is being developed for residential or rural residential purposes. The area around Brownhill Substation to the east primarily comprises a rural environment.

1.5. Delegated authority

The Team Leader – Planning Central South has delegated authority, in accordance with Schedule 2A of the Auckland Council Delegations: Chief Executive Officer (updated March 2025) v1.83, to exercise the council’s functions, powers, duties and discretions under the Resource Management Act 1991 in relation to section 181(3), to approve minor alterations to a designation.

The NoR request under section 181(3) can therefore be considered by the Team Leader – Planning - Central South.

1.6. Relevant statutory provisions

Section 181 “Alteration of designation” of the Resource Management Act 1991 states:

- (1) A requiring authority that is responsible for a designation may at any time give notice to the territorial authority of its requirement to alter the designation.*
- (2) Subject to subsection (3), sections 168 to 179 and 198AA to 198AD shall, with all necessary modifications, apply to a requirement referred to in subsection (1) as if it were a requirement for a new designation.*
- (3) A territorial authority may at any time alter a designation in its district plan or a requirement in its proposed district plan if-*
 - (a) The alteration-*
 - (i) Involves no more than minor changes to the effects on the environment associated with the use or proposed use of land or any water concerned; or*
 - (ii) Involves only minor changes or adjustments to the boundaries of the designation or requirement; and*
 - (b) Written notice of the proposed alteration has been given to every owner or occupier of the land directly affected and those owners or occupiers agree with the alteration; and*
 - (c) Both the territorial authority and the requiring authority agree with the alteration –*

and sections 168 to 179 and 198AA to 198AD shall not apply to any such alteration.

2. Analysis of the proposed alteration

The relevant matters to consider are contained in section 181(3) of the RMA provided above.

Assessment of Environmental Effects (s181(3)(a)(i))

The requiring authority has provided an assessment of environmental effects [AEE] with the NoR (refer Attachment 1 to this report). The following effects have been considered and are considered in the same order as set out in the RA's AEE:-

- Traffic
- Three Waters [Water, wastewater and stormwater] Network
- Ecology – Terrestrial and Freshwater
- Archaeology
- Noise
- Other Effects

Construction Methodology is also addressed.

2.1 Traffic

Transpower's Assessment

Transpower addresses traffic effects in section 5.1 of their AEE. They refer to a traffic effects assessment by Tonkin and Taylor, [attached as Appendix C] broken down into each of the sections of the proposed designation corridor [see section 3.2 of the AEE] and proposed mitigation measures where these are needed [see 5.1.6 in the AEE]. Further information/clarification was provided on 21 October 2024 as a result of Council's s92 request. [see attachment 2].

In 5.1.1 – 5.1.5 of the AEE, each part of the designated route is broken down into areas with effects assessed during active construction, summarised as follows using extracts from the RA's AEE:

- 322 East Tamaki Road to Accent Drive – “there will be insufficient carriageway to allow two lanes of traffic during construction without mitigation measures....”
- Accent Drive from East Tamaki Road to Te Irirangi Drive – “there is sufficient carriageway to facilitate two way traffic during construction without the need for temporary traffic signals, stop/go controls or localized temporary widening to accommodate traffic flows... Access to properties, bus stops and parking will be restricted during construction period and mitigation measures will be required”.
- Crossing Te Irirangi Drive – “construction activities in the intersection could result in significant traffic congestion from lane closures and temporarily reduced speed limits”.
- Accent Drive from Te Irirangi Drive to Chapel Road -: “there is sufficient to ensure two-way traffic without the need for temporary traffic signals, stop/go controls or localized temporary widening to accommodate traffic flows”.

- Stancombe Road from Chapel Road to Kensway Drive – “road widths during both active and passive construction will be sufficient to accommodate two-way traffic flows without the need for temporary traffic signals, stop/go controls or localized temporary widening to accommodate traffic flows.

There are a number of residential properties, a Buddhist temple and Barry Curtis Park which all have accesses that will be affected by the proposed construction works however alternative access points or routes are available.

As Barry Curtis Park is a large regional sports facility that hosts school sports and tournaments, these may be affected by the works along this section of road at times. A range of alternative arterial routes are also available so traffic effects are expected to be very localised and the reduction in capacity for through traffic will be minor overall. Access to properties, bus stops and parking will be restricted during construction periods and mitigation measures will be required”..

Tonkin & Taylor propose a range of general and specific mitigation measures during active construction periods including [but not exclusively] :-

- Scheduling work to minimise disruption.
- Scheduling works on the Te Irirangi Drive crossing in off peak periods only or where adjacent to school outside peak time.
- Use of temporary traffic controls, stop/go controls or temporary traffic signals to accommodate traffic;
- Local detours via adjacent roads while intersections or roads are closed;
- Use information boards providing advance notification of works start date and expected duration;
- Liaison with bus operator, schools or sports clubs affected industrial and commercial sites, residents and schools prior to works being scheduled to determine most suitable times to undertake works and provision of alternative access arrangements where necessary; and
- Planning and co-ordinating the works progressively with Fire and Emergency New Zealand to ensure that access for emergency services is maintained.

In the AEE, [Tonkin and Taylor] conclude that “the effects on the transport network along the altered route will be similar to those in the original NoR for the BHL-OTA cable. Tonkin & Taylor’s proposed mitigations comply with the revised designation conditions (see section 8 and Appendix 9) and take into account the unique circumstances of each location along the revised route”.

Specialist Review [Council]

Andrew Temperley of Traffic Planning Consultants Ltd, Council’s traffic expert for the NoR has reviewed the NoR documents [attachment 5] including the Traffic Assessment Report **[TA]** by Tonkin and Taylor, the information provided as a result of the s92 request and the proposed designation conditions provided by Transpower at the time of lodgement. [Appendix 9]

In Table 2 of Mr Temperley's review, he sets out the key routes which the proposed designation alterations follow and summaries their key characteristics including road classification and traffic volumes. This includes East Tamaki Road, Accent Drive, Te Irirangi Drive crossing and Stancombe Road. Mr Temperley comments that:

"The road network adjoining the route of the proposed designation alteration benefits from the availability of parallel running routes within reasonable proximity, which provide potential to serve as detour routes for some longer distance traffic in the event of the proposed works taking place."

Mr Temperley identifies the following bus services which operate along the following sections of the altered designation route:

- Accent Drive between East Tamaki Road and Te Irirangi Dive – Route 352 operates at a typical frequency of 3 buses per hour
- Stancombe Road between Chapel Road and Jeffs Road – Route 35 operates at a typical frequency of 4 buses per hour
- A Stancombe Road between Kensway Drive and Jeffs Road – Route 355 operates at a typical frequency of 2 buses per hour, increasing to 3 per hour during peak times

Mr Temperley considers that the construction works associated with the installation of the transmission cable could potentially impact bus stop locations and bus operations, such as the need to temporarily close and relocate some bus stops, the need for local detours and disruptions to bus schedules due to congestion and disruption through traffic management.

Mr Temperley identifies that the TA draws the following conclusions:

- The alterations to designation will streamline the construction methodology and allow easier maintenance access along the route.
- New development in the area includes alternative routes that can be used by through traffic, which could serve to relieve adverse traffic effects during the construction period.
- The effects on the transport network along the altered route will be similar to those in the original Notice of Requirement.

Overall, Mr Temperley is "satisfied with the applicant's assessment of issues identified and mitigatory measures in response to these". This includes a Construction Management Plan [CMP] and Transport Management Plan [TMP] to maintain a safe and efficient environment for active mode user and public transport. The TMP conditions require consideration of potential effects on road users and the road network during construction and detailed proposals of mitigation measures during the construction phase.

Mr Temperley has made several recommendations to better address the effects of the proposed alteration to Designation 8517 and these are summarised below.

In terms of addressing pre-existing safety issues on the adjoining road network, Mr Temperley advises that the development of traffic management measures as required through the TMP prior to construction should take into account of crash 'hot spots' at these three locations:

- a. Accent Drive / East Tamaki Road – crossing / turning crashes
- b. Accent Drive / Te Irirangi Drive – crossing / turning and rear-end crashes
- c. Accent Drive / Chapel Road – rear end / obstruction crashes.

To more comprehensively address the effects of construction related traffic effects on the road network, Mr Temperley recommends an amendment to condition 22a (TMP) in relation to routing heavy construction traffic in a manner that minimizes uncontrolled right turn movements and maximises the use of the arterial road network. [see attachment 6]

Mr Temperley notes that the proposed future Airport to Botany [A2B] bus rapid transit route would follow the route of the Te Irirangi Drive in the vicinity of the proposal. Where the Auckland Transport Bus Rapid Transit – Botany to Rongomai Park designation overlaps with this designation at the intersection of Te Irirangi Drive and Accent Drive, Mr Temperley considers that the timing of construction activities associated with the two designations could be aligned where practicable to minimise disruption. Mr Temperley supports AT’s proposed Advice Note on this matter.

Mr Temperley also supports AT’s proposals for new and updated conditions. This is discussed in more detail below.

In summary, Mr Temperley states that subject to his proposed amendments, and also noting his support for AT’s amendments to the conditions, “the transportation effects of the activity enabled by the NoR during its construction phase, can be appropriately catered for on the future adjoining transport network, without adversely impacting its function, capacity or safety”.

Comments were also received from **Auckland Transport**, as discussed below.

Auckland Transport [AT] was provided an opportunity to review the NoR and AEE. Ms Marguerite Pearson and Mr Simon Andrew on behalf of AT, were involved in both pre application discussions and post lodgement review of the NoR. They support “this alteration to provide important infrastructure to reroute a small section of the future underground line to better match development patterns; and to reduce the width of the designation in some locations due to recent residential development”. AT also notes that the future designation for Eastern Busway will intersect with the rerouted cables at Accent Drive and Te Irirangi Drive and confirm they are in discussions with Transpower over this.

AT have recommended an updated condition [no.29] and a new condition and a new Advice Note. [see Attachment 6]. These conditions have been included in Transpower’s proposal. [see Appendix 9 in Attachment 1].

AT considers that “the above will cover all necessary transport matters, and the updated condition set for the designation (provided by Transpower in August 2023) will manage any potential transport adverse effects and ensure alignment with the future Eastern Busway”.

Given the time delays between AT’s initial response dated 30 August 2023, AT have subsequently confirmed on 29 October 2024 that “they have no concerns with this and have accepted both the alteration and extension to lapse date”. The correspondence relating to acceptance of these conditions is contained in Attachment 4 of the s92 response dated November 2024 – see

Attachment 4 to this report.

Officer comment and conclusions

I rely on the review and conclusions provided by both Council's traffic expert and AT. I agree that the traffic effects from construction will be no more than minor, subject to the inclusion of the proposed and amended conditions, and advice note. I note that Transpower accepts these conditions. [Attachment 8]

2.1 Three Waters Network

Transpower's Assessment

Transpower's NoR has a supporting technical report provided by Tonkin and Taylor [see Appendix 5 as part of the AEE]. This is addressed in 5.2 of the AEE.

Tonkin and Taylor consider that "existing conditions 6-8 and 10-11 of designation 8517 are appropriate for planning the design, management, construction, operation and maintenance of new electricity transmission works within the designation in relation to existing three waters infrastructure. The conditions require Transpower to engage and consult with the utility operators to ensure safe installation and operation of the new transmission works in the vicinity of the existing utility infrastructure. Accordingly, we consider that the change in effects of the alteration to the route for the designation on three waters infrastructure are no more than minor."

Specialist Review

Ms Carmel O'Sullivan, Senior Healthy Waters Specialist, Auckland Council, has undertaken an assessment of Transpower's NoR and AEE.

Ms O'Sullivan "supports the proposed realignment of the cable designation along East Tamaki Drive and Accent Drive rather than its current alignment crossing Te Puke o Tara Sports Park and the adjacent reserve as the proposed alignment will not impact stormwater assets within the reserve. Shifting the alignment out means that it lowers the risk to Flat Bush dam which is a stormwater dam located within the reserve". She concludes that the proposed realignment will not result in any changes to flood risk within the vicinity of the existing or proposed alignments.

However, Ms O'Sullivan notes that "during the construction phase there is a small risk to existing infrastructure which may be in the path of the proposed Transpower infrastructure." Therefore, she requests that an additional clause in condition 7 be included to ensure that there is no damage to Healthy Waters' assets

Officer comment and conclusions

I accept the review and conclusions provided by Ms O'Sullivan. This additional clause as part of condition 7 [see Attachment 6] will ensure Council's assets are protected if the cable is installed via directional drilling. Therefore the effects of the proposed alteration to the existing destination will be no more than minor given the mitigation proposed and subject to

this clause being included in the decision made by Transpower.

2.3 Ecology

Transpower addresses ecological context and values with regard to the alteration to the designation in section 3.4 and the effects in 5.3 of the AEE. The AEE refers to an Ecological Impact Assessment [EclA] by Boffa Miskell Ltd [Boffa Miskell] undertaken in support of the alteration to the designation [attached as Appendix 6].

2.3.1 Terrestrial

Transpower's Assessment

In 3.4.1 and 3.4.3 of the AEE, Transpower indicates that “Where the designation route is proposed to be moved to, the road corridor contains scattered individual deciduous exotic and small titoki street trees. These are mainly located along Accent Drive. In addition, the proposed alignment along Ormiston Road is situated with a cutting, vegetated in rank grass which clumps of pampas, gorse, agapanthus, patches of low kanuka and scrubby regenerating pines. Shelter belts of taller exotic trees are present along the crest of the bank of the cutting”.

Looking at ecological effects overall in 5.3, Boffa Miskell conclude “that the alteration to designation 8517 involves no more than a minor change to the effects on the environment associated with the use of any land or water concerned, except insofar that the realignment will result in improved ecological outcomes”. [Rwfer also to section 2.3.2 below]

Specialist Review

The potential ecological [terrestrial] effects from the proposed alteration of the designation route has been assessed by Carl Ackroyd, Senior Ecologist in the Council's Environmental Services team. His review is included in Attachment 5 to this report.

Mr Ackroyd concurs with “the ecological assessment of the designation alignment as described in the EclA. The alteration to the alignment reduces the ecological effects by confining the route largely to the road alignment. Notably the altered alignment avoids ecological effects between Chapel Road and East Tamaki Road. Initially Transpower proposed to remove conditions 11e and 11k from the existing designation. Condition 11e relates to disturbance to riparian areas /stream banks/ beds and Condition 11k is about notifying the council in advance of commencing work at Turanga Creek, Mangemangeroa Stream and Otara Creek [see Appendix 9].

Mr Ackroyd states that “the proposal to remove this condition is inappropriate as the altered alignment still crosses watercourse and has the potential to disturb riparian areas, stream banks and beds.”. He also comments that “the proposal to remove this condition is inappropriate as the designation still crosses Tūranga Creek and Otara Creek... but is outside of the Mangemangeroa catchment.”

However, following concerns raised by Mr Ackroyd, Transpower have agreed that Condition 11e will be reinstated in full and Condition 11k be amended to remove the reference to the

Mangemangeroa Stream. [see Attachment 6]

Mr Ackroyd concludes that provided the above conditions are included and/or amended, there will be no change to effects on terrestrial ecology. [see Attachment 5]

Officer comment and conclusions

I rely on Mr Ackroyd's assessment and conclusions and I note his comments about including or amending relevant conditions as identified above. This will ensure that the effects will be appropriately managed at the completion of the works.

Given the above assessment, I agree with Mr Ackroyd and I concur that there will be no change to the ecological [terrestrial] effects as a result of the alteration.

2.3.2 Ecology - Freshwater

Transpower's Assessment

A values assessment of freshwater ecology is set out in 3.4.2 of the RA's AEE.

In 5.3 Transpower concludes that "the alteration to designation 8517 involves no more than a minor change to the effects on the environment associated with the use of any land or water concerned, except insofar that the realignment will result in improved ecological outcomes". [as set out above]

Specialist Review

The potential ecological [freshwater] effects from the proposed alteration of the designation route has been assessed by Antoinette Bootsma, Council's Senior Specialist – Earth Streams and Trees, Regulatory Engineering and Resources Consents. Her review is included In Attachment 5 to this report. Ms Bootsma notes that the existing designation conditions require a Construction Management Plan (CMP) prior to commencing any construction activity.

Conditions relevant to freshwater ecological matters are:

- specifications for water quality and sediment controls (Condition 10l);
- specifications to minimise any discharge of sediments into watercourses (Condition 11d);
- a requirement to (as far as practicable) minimise disturbance to riparian areas and stream banks and beds during construction (Condition 11e);
- a requirement to notify the Council in writing at least 10 working days before commencing works (including separate notifications for works commencing in Turanga Creek, Mangemangeroa Stream and Otara Creek), notify that works have been completed within 10 working days following completion of the works (Condition 11k).

Ms Bootsma states that "The proposed alternative designation route will avoid all watercourses and wetlands, which will remove notification requirements for works in watercourses specified in Condition 11k and will remove the need for Condition 11e. The required specifications (Conditions 10l and 11d) for management of water and sediment discharges (particularly to watercourses) will be substantially simplified as a result..... I further defer to Council's terrestrial ecologist for their assessment of effects on vegetation removal.... "

[Note - see proposed changes to conditions 11e and 11k above].

Ms Bootsma agrees with the findings of the EclA by Boffa Miskell. Given the existing designation impacts several features of ecological value on the streams and wetland, the proposed alterations to the designation route avoids all these effects. Therefore, this proposal involves no more than a minor change to the effects on the environment.

Officer comment and conclusions

I rely on the review and conclusions provided by Ms Bootsma and agree that the proposed designation route is largely confined to the road alignment and avoids all wetlands and watercourses. Therefore, the effects are considered to involve no more than a minor change.

2.4 Archaeology

Transpower's Assessment

Transpower addresses archaeological effects in section 5.4 of the AEE. This is supported by a revised Archaeological Assessment provided by CFG Heritage Ltd [albeit still dated 8 July 2024 but received as part of the s92 responses [see Attachment 8 of s92 responses in Attachment 2 of this report].

The CFG assessment states that “There are no recorded historic heritage or archaeological sites within the road reserve of the existing or proposed new designation and no previously identified sites were identified during field survey of the proposed new designation route” and “both the existing and proposed designation route will not affect known historic heritage values but cautions that there is the potential for unrecorded subsurface historic and prehistoric archaeological features to exist in the area of works within the East Tamaki Road Reserve”.

Specialist Review

Ms Plowman, Principal Heritage Advisor for the Council, has reviewed the NoR documents including the revised Archaeological Assessment [albeit still dated 8 July 2024 but received as part of the s92 responses [review in Attachment 2 to this report].

Ms Plowman states that this assessment “identifies nine archaeological heritage sites located along the proposed alteration to the designation route in the vicinity of East Tamaki and Stancombe Roads.” The effects on recorded historic heritage and proposed mitigation is shown in Figure 1, Table 1 of Ms Plowman's review.

Ms Plowman agrees with and supports the [CFG] assessment of the potential risk to previously unidentified archaeological/historic heritage features within the East Tamaki Road and the designation in general. She also agrees that it is appropriate to secure a HNZPTA authority prior to earthworks associated with the new designation in East Tamaki Road. However, she notes that CFG have not considered the potential for inadvertent damage to the 19th century dry stone boundary walls of the category A* scheduled Hampton Park/St John Church (AUP ID 1343) during construction associated with the new

designation route along East Tamaki Road.

Transpower's response to a request for further information in this regard was as follows:-

"The project is not yet the subject of detailed design and contractor engagement, so Transpower is not in a position to provide the information requested. The archaeological assessment recommends that an archaeological authority be applied for before works commence and this has been included as a designation condition. It is expected that the application for the authority will address the matters discussed. In addition, the designation conditions require a Construction Management Plan and a Traffic Management Plan while the RMA requires an Outline Plan of Works. It is therefore anticipated that these matters can be addressed more effectively at a later stage."

Ms Plowman notes that "providing management provisions to protect the scheduled dry-stone walls associated with Hampton Park/St John Church (AUP ID 1343) adjacent the new designation route along East Tamaki Drive can be achieved through the existing condition to provide a Construction Management Plan, with minor amendments".

In conclusion, Ms Plowman supports the alteration to the designation "provided adequate mitigation occurs for any adverse effects on the archaeological and historic heritage resource. The provided amendments to Condition 9 and Condition 10 ... should be attached to any granted NOR and will ensure the effects on historic heritage will be minor."

Officer comment and conclusions

I have considered the findings of Ms Plowman and agree with them. The revised conditions, as proposed by Ms Plowman and confirmed by Transpower are included in Attachment 6. Accordingly, I consider that the revised conditions will ensure that the effects on historic heritage effects will no more than minor.

Other Effects

In 5.5 of the AEE, Transpower states "all other effects are unlikely to be different from those that were assessed at the time the designation was considered and confirmed in 2009 and the designation conditions imposed at that time address these effects where necessary".

2.4 Noise

Transpower's Assessment and their Specialist Review

Transpower does not address this in any depth in the AEE [see section 5.5] apart from identifying a compliance issue with condition 14 of the designation. [see Appendix 7 referenced in Attachment 1 of this report].

This requires Transpower to ensure construction noise does not exceed the limits of NZS6803:1999 [Acoustics - Construction Noise]. However, Transpower state that "this is not the intent of that standard and Transpower is proposing changes to Conditions 14 and 15 to align them with the requirements of the construction noise standard".

Transpower's experts WSP have provided a supporting technical document and advice. (see₁₈

Appendix 7) as part of the AEE. Transpower state that “WSP have assessed the acoustic effects of these changes and concluded that they will be low”.

Specialist Review

The potential noise effects from the proposed alteration of the designation route have been assessed by Andrew Gordon, Senior Specialist, Council’s Contamination, Air and Noise team. His review is included in Attachment 5 to this report.

Mr Gordon agrees that “altering the designation to better align with the roading layout is supported as it is expected to provide better setback distances from works to neighbouring buildings. He is aware that it is proposed to change/update existing designation conditions 14 and 15 relating to construction noise associated with future cabling works. Mr Gordon agrees that “conditions should be amended primarily because in some situations it may not be practicable to meet construction noise limits at all ‘affected receivers’ at all times”.

Officer comment and conclusions

I rely on Mr Gordon’s assessment and agree that the NoR will involve carrying out minor changes to the existing designation route which would better align the designation with the roading layout which would then avoid the proximity of sensitive land uses.

I consider that the original conditions of the designation [see Appendix 1 as part of the AEE], and as amended through this request, will ensure that the effects will be appropriately managed during and at the completion of the works. Given the above assessment, I agree with Mr Gordon and consider the change in the noise effects as a result of the alteration to the route will be no more than minor.

2.5 Cultural Effects

Transpower

In section 7 of the AEE Transpower state that they “have advised the following tangata whenua groups of the proposal and provided them with a copy of the archaeological assessment”. This included Ngāi Tai ki Tāmaki; Ngāti Maru; Ngāti Pāoa Iwi Trust; Ngāti Paoa Trust Board; Ngāti Tamaoho; Ngāti Tamaterā; Ngāti Te Ata; Ngāti Whanaunga; Te Ahiwaru – Waiohū; Te Ākitai Waiohū; Te Patukirikiri; and Waikato – Tainui. Transpower state [in P7 in the response to s92 request – see Attachment 2 to this report] that consultation with mana whenua “was on alterations to the route and updated conditions. No changes to conditions were made as a result of that consultation”.

Transpower state that “Ngāti Tamaoho are the only party that responded, and they have prepared a Cultural Values Assessment (CVA) and made it available to Transpower”. Transpower confirm that they are continuing to engage with mana whenua and will continue to work with Ngāti Tamaoho to implement recommendations set out in the CVA. [see Appendix 8.3 as part of the AEE]

Consultation with other parties

Transpower indicates that parties including AT, Vector Ltd, Watercare, schools in the vicinity, Fire and Emergency NZ, Spark and Chorus have been contacted, provided with plans and the opportunity to raise any issues with the Transpower team.

The results of this consultation are set out in Appendix 8 to Transpower's AEE.

In summary, several parties requested confirmation of conditions, or new conditions or confirmed they had no concerns. Transpower have agreed to these amendments, or additional sub clauses requested by these parties. [see Attachment 6]

Construction Methodology

Transpower

In section 2.3 of the AEE Transpower note "The construction methodology for the proposed development will be generally as described in the original NoR document.... [2009]. However, the layout of the cable arrangement is proposed to change in line with current best practice. Instead of a triangle/pyramid arrangement within the trench, the cable layout will be changed to a flat formation."

Transpower state that "All works will comply with the National Code of Practice for Utility Operators' Access to Transport Corridors under the Utilities Access Act 2010 in accordance with proposed amended Condition 18 of the NoR (discussed in sections 4 and 8 of the AEE).

No experts within Council have commented on construction methodology, the National Code and other relevant legislation. However, I agree that the changes in the construction methodology in relation to this alteration involve no more than a minor change to the effects of the environment associated with the construction of the project, in that they reflect the construction methodology changes generally since the designation was confirmed in 2009.

Effects Conclusion

Transpower has taken the opportunity to review the designated route now that the pattern for the area has developed or settled, over time.

Following this review, Transpower have proposed changes to the designation route to reduce environmental effects, further minimise disruption to the new urban land use of the area and improve the ease with which the cable can be constructed, thereby increasing efficiency.

The alteration is to re-align some of the existing designation with public local roads will provide greater certainty of supply and efficient use of the surrounding privately owned land and Council parks.

I note that the route selected is the shortest available while maximising the use of the road network. Any potential environmental effects arising from the alteration will be appropriately managed by the amendments to, new and existing designation conditions.

I can confirm that Transpower have accepted proposed changes to conditions, new conditions and advice notes, along with the general updates proposed. [see Attachment 8]

Given the above, I consider that, overall, for the purposes of s181(3)(a)(i), the alteration will involve no more than a minor change to the effects on the environment associated with the proposed use of land.

3.0 Assessment of minor changes or adjustments to the boundary (s181(3)(a)(i))

The alteration to the designation involves changes to the boundary of the existing designation. This is set out in section 2.2 and 2.2.1 of the AEE.

Transpower state that:-

“The first additional area to the designation is to begin at the existing designation route at 359 East Tāmaki Road and follow East Tāmaki Road to its intersection with Accent Drive and then follow Accent Drive to the area within the vicinity of the intersection of Chapel Road and Stancombe Road (see pages 4-6 of the Proposed BHL-OTA Designation Alteration Land Requirement Plans).

The second additional area to the designation is to apply the route within the Stancombe Road corridor between its intersections with Chapel Road and Kensway Drive, alongside Barry Curtis Park (see pages 7-8 of the Proposed BHL-OTA Designation Alteration Land Requirement Plans).”

Given the area of the existing designation is 20.298ha and the proposed areas to be altered are 20.856ha, the additional area is 0.558ha. I consider this to be, overall, given the length of the route, a minor change.

It must be noted that the second ‘stage’ of Transpower’s proposal is to remove three areas of the existing designation, once the alterations are confirmed. This is covered in Part 2 below.

4.0 Written notice of the proposed alteration has been given to every owner or occupier of the land directly affected and those owners and occupiers agree with the alteration (s181(3)(b))

Transpower is the requiring authority seeking the minor alteration and supports the proposed alteration.

Transpower has given written notice to Auckland Transport as landowner for part of the area affected by the NoR, who have confirmed that they support the proposal provided amendments to the conditions of Designations 8517 are confirmed [see Attachment 4 as part of the s92 response from Transpower].

Transpower has given written notice to Auckland Council Parks and Community Facilities directorate on behalf of Auckland Council as landowner for part of the area affected by the NoR as the proposed changes to alter the designation and re-route the

cables “will remove the designation from Barry Curtis Park and Te Puke o Tara Sports Park”.

The Manager of Land Advisory Services in this directorate has responsibility on behalf of Council as landowner and has advised that Auckland Council “in its non-regulatory capacity agrees to, accepts and supports the proposal. The council agrees that it ‘would be advantageous to better align the designation with the development pattern in the area’ and by removing the designation from council owned parks relieves council from future burden of the designation, allowing more opportunity for the land to be developed and utilised for its park purpose.” [see attachment 7 as part of the s92 responses]

In section 7 of the AEE, Transpower state that “representatives for the property owner at 2 Harekeke Terrace, 4 Springhill Road and 227 Brownhill Road [Lily Investment 227 Ltd], and the property owner at 542 Ormiston Road [Mayall Property Group] were sent notice of the proposed alteration in 2023. Transpower have advised that the landowners agree to the alteration to the designation”. (see Appendix 8.5 as part of the AEE and updated in Attachment 5 as part of the s92 response from Transpower).

Additionally, Transpower confirms that they “hold easements, in perpetuity, over all privately-owned land along the designated route (easements have been relinquished over land that has subsequently become road)”.

Therefore in my view, Transpower have given written notice of the proposed alteration to every owner or occupier of the land directly affected and that those owners and occupiers agree with the alteration.

5.0 Agreement of both the territorial authority and the requiring authority (181(3)(c))

Transpower’s experts have reviewed their proposed conditions and “consider that they continue to be suitable to manage the effects of the installation, operation and maintenance of the proposed underground cable between the Ōtāhuhu and Brownhill Road substations”.

Section 8 of the AEE finds that some changes to conditions are required and new conditions are proposed. Appendix 9 as part of the lodged NoR documents originally served on Council includes clean and tracked versions of conditions.

Following the NoR being served on Council, minor changes to conditions suggested by Council’s experts have been considered by Transpower. A draft set of recommendation conditions was provided to Transpower and confirmation was received on 23 April 2025 that they are in agreement [see Attachment 6 for tracked changes and Attachment 7 for a clean set of agreed conditions].

The proposed amendments to 17 conditions includes both additional clauses and updated terminology are Condition 7 [Existing Utilities], Condition 9 [Archaeology], conditions 10, 11 and 12 [Construction Management Plan], Conditions 14, 15 and 16 [Construction Maintenance and Noise], Conditions 18, 19, 22, 23, 24 and 25 [Traffic/Roading], Condition 29 [Remediation of property, roads and footpaths],

Condition 30 [Cultural/Spiritual] , Condition 32 [Future roading].

The two new conditions are [new] number 31 [Post construction] and [new] number 33 [Future Roothing]

I agree that the above referenced changes to conditions proposed for Designation 8517 are administrative in nature in that they reflect the changes since the designation was confirmed in 2009. They include correcting minor errors, aligning the designation with the most up to date versions of documents incorporated by reference, amending road and organisation names [e.g Heritage New Zealand and Kāinga Ora] and do not change the outcomes sought under the existing conditions or the designation.

Therefore, Auckland Council and Transpower have agreed to a set of conditions.

The alteration to the designation has been requested by Transpower and therefore it agrees to the alteration. Auckland Council agrees with the proposed alteration for the following reasons:

- The alteration involves no more than minor changes to the environmental effects.
- The alteration involves only minor changes to the boundary.
- The owners and/or occupiers of all land directly affected by the proposed alteration have been given notice and agree with the proposed alteration.

Adherence with recommended conditions will ensure any potential adverse effects are avoided, remedied or mitigated.

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

The proposed alteration meets the statutory tests of Section 181(3) of the Resource Management Act 1991, in that:

- The alteration involves no more than minor changes to the environmental effects.
- Recommended conditions will ensure any potential adverse effects are avoided, remedied or mitigated.
- There are minor changes or adjustments to the boundaries of the existing designation.
- The owners and/or occupiers of all land directly affected agree with the alteration.
- The council and the requiring authority agree with the alteration.

6.2 Recommendations

1. That pursuant to Section 181(3) of the Resource Management Act 1991, Transpower's notice of requirement for an alteration to Designation 8517 be **confirmed** subject to the amended conditions recommended in this report.
2. That Designation 8517 be amended in Chapter K Designations in the Auckland Unitary Plan Operative in part, as recommended in this report.

6.3 Agreed alterations

The text alterations are shown in Attachment 6. Amendments are shown as either ~~striketrough~~ or underlined.

Report Prepared by:

Name: Jimmy Zhang

Title: Senior Policy Planner – Planning: Central/South

Signature:



Date: 28 April, 2025

7.0 SECTION 181(3) DETERMINATION

Having read the council planner's report and recommendations on the notice or requirement, I am satisfied I have adequate information to consider the matters required by the Resource Management Act 1991 (the RMA) and to make a decision under delegated authority.

Accordingly, the notice of requirement for an alteration to Designation 8517 Brownhill Road to Ōtāhuhu (**BHL-OTA**) Underground Transmission Cables is confirmed under section 181(3) of the RMA as agreed and set out in section 6.2 of this report.

Name: Craig Cairncross

Title: Team Leader – Planning: Central/South

Signature:



Date: 28 April, 2025

PART 2: PARTIAL REMOVAL OF DESIGNATION #8517 PURSUANT TO S182 of the Resource Management Act 1991

1. Description

1.1. References

Designation number:	8517
Lodgement date:	18 December 2024 and updated 13 February 2025
Requiring authority:	Transpower New Zealand Limited
Reporting officer:	Vanessa Leddra
Site address:	227 Brownhill Road, Whitford to 26-28 Kaitawa Street, Otara. The addresses and legal descriptions of land from which the designation will be removed are set out in Table 1 below.

Table 1: Land from which the designation will be removed

Address	Legal Description	Parcel ID
359 East Tamaki Road, East Tamaki	Lot 1 DP 205294	4722804
383 East Tamaki Road, East Tamaki	Lot 26 DP 615	5086497
1 Stancombe Road, Flat Bush	Lot 28 DP 317068	6637360
Road	N/A	5212610
N/A	Section 3 SO 70224	6576300
Road	N/A	5263413
Road	Section 1 SO 70224	6576298
Road	N/A	5263414
2 Stancombe Road, Flat Bush	Lot 2 DP 348822	6755107
N/A	Lot 5 DP 348822	6755110
Road	N/A	5237233
Road	Section 1 SO 370732	6868736
141 Chapel Road, Flat Bush	Lot 2 DP 459488	7502660
Road	Section 2 SO 370732	6868737
3 Kitenga Road, Flat Bush	Lot 10 DP 507828	7781807
5 Kitenga Road, Flat Bush	Lot 11 DP 507828	7781808
7 Kitenga Road, Flat Bush	Lot 12 DP 507828	7781809
9 Kitenga Road, Flat Bush	Lot 13 DP 507828	7781810
11 Kitenga Road, Flat Bush	Lot 14 DP 507828	7781811
15 Kitenga Road, Flat Bush	Lot 100 DP 511772	7786309
21 Kitenga Road, Flat Bush	Lot 15 DP 500844	7742986
23 Kitenga Road, Flat Bush	Lot 16 DP 500844	7742987
25 Kitenga Road, Flat Bush	Lot 17 DP 500844	7742988
27 Kitenga Road, Flat Bush	Lot 18 DP 500844	7742989
29 Kitenga Road, Flat Bush	Lot 19 DP 500844	7742990
31 Kitenga Road, Flat Bush	Lot 20 DP 500844	7742991
1 Tau Drive, Flat Bush	Lot 21 DP 500844	7742992
35 Kitenga Road, Flat Bush	Lot 43 DP 500844	7743014
37 Kitenga Road, Flat Bush	Lot 42 DP 500844	7743013
39 Kitenga Road, Flat Bush	Lot 41 DP 500844	7743012
41 Kitenga Road, Flat Bush	Lot 40 DP 500844	7743013

2.0 Background

2.1 Details of designation

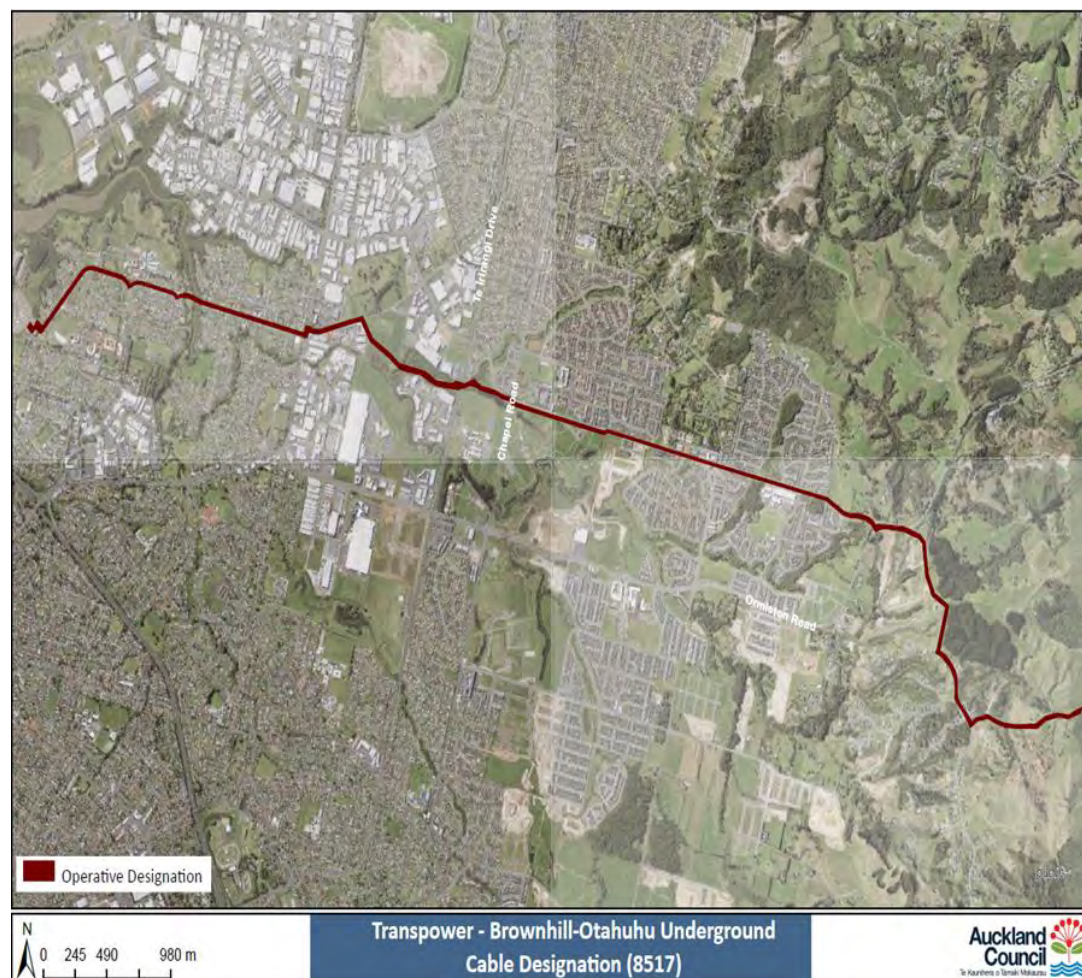
Transpower New Zealand Ltd (**Transpower**) has submitted a Form 23 (contained in Attachment 3 to this report). Section 2.2 of the AEE submitted as part of the NoR to alter the designation route also outlines the details and history of the designation and the reason for its partial removal. This is summarised below.

Designation 8517 was confirmed in the Auckland Unitary Plan (**AUP**) in 2009. The purpose of the designation is for “the construction, operation and maintenance of a double-circuit underground 220kV cable as part of the upper North Island Grid Upgrade Project, to convey electricity between the Otahuhu Substation and the substation site at Brownhill Road, and ancillary activities.”

As set out in section 1 of this report, Transpower “has reviewed the designation route in light of the surrounding land development pattern and considers that some minor changes are warranted to better align the designation with the roading layout and avoid some areas where adverse environmental effects could occur during construction. These changes will make the construction, operation and maintenance of the cables more efficient. “

The designation is currently shown in the AUP maps as follows:

Figure 1: Map showing extent of Designation 8517



Transpower confirm their changes to the designation route will occur in two stages.

The first is to alter the designation as a minor alteration under s181(3) of the RMA, as set out in Part 1 of the report, to include new areas of land to be designated.

The second stage is to remove the designation in part under section 182 of the RMA from land where it is no longer required. This is covered in the subject section (ie: part 2) of this report.

2.2 Land affected by removal

Transpower have provided site plans showing the extent of the partial removal of the designation (see Appendix 2 as part of lodged documents].

Section 2.2.2 of the AEE outlines the three parts of the designation to be removed:

“The first part of the designation to be removed is the area traversing the green space between East Tāmaki Road and the eastern end of Accent Drive (see pages 4-6 of the Proposed BHL-OTA Designation Alteration Land Requirement Plans).

The second part of the designation to be removed is alongside Stancombe Road so it is no longer within Barry Curtis Park (see pages 6-8 of the Proposed BHL-OTA Designation Alteration Land Requirement Plans).

The third part of the designation to be removed is a very minor reduction to the width of the designation along Kitenga Road to align the designation boundary with the road reserve boundary. With recent updates to the accuracy of GIS technology, the designation boundary can be more accurately mapped and Transpower has determined that the designation boundary on Kitenga Road is shown on some private properties where it has always intended to be located in the road reserve (see pages 11 and 12 of the Proposed BHL-OTA Designation Alteration Land Requirement Plans).”

Transpower advises that the partial removal of Designation 8517 is approximately 48,853 sq m. in area. The areas to be removed from the AUP are shown below.

East Tamaki Road

Accent Drive

Te Irirangi Drive

Chapel Road

Bayersock Road

Stancombe Road

Ormiston Road

8517

Current Designation

Areas to be removed

28

Figure 3: Map 2 of 2 showing areas to be removed from current extent of Designation 8517 shown as hatched ⁵ [Kitenga and Tau Roads]



⁵ See Figure 1, section 1.3, Part 1 above for the whole extent of the designation

2.4 Delegated authority to consider alterations to designations

The Team Leader – Planning Central and South has delegated authority, in accordance with Schedule 2A of the Auckland Council Delegations: Chief Executive Officer (updated March 2025) v1.8⁶, to exercise the council's functions, powers, duties and discretions under the Resource Management Act 1991 in relation to section 182 to approve a [partial] removal of a designation.

3.0 Relevant Statutory Provisions

Section 182 of the RMA allows a requiring authority to remove a designation or part of a designation if it no longer requires it.

This section also applies to a notice by a territorial authority, to withdraw its own designation or part of a designation within its own district.

182 Removal of designation

(1) If a requiring authority no longer wants a designation or part of a designation, it shall give notice in the prescribed form to—

(d) the territorial authority concerned; and

(b) every person who is known by the requiring authority to be the owner or occupier of any land to which the designation relates; and

(c) every other person who, in the opinion of the requiring authority, is likely to be affected by the designation.

(2) As soon as reasonably practicable after receiving a notice under subsection (1), the territorial authority shall, without using the process in Schedule 1, amend its district plan accordingly.

(3) The provisions of Schedule 1 shall not apply to any removal of a designation or part of a designation under this section.

(4) This section shall apply, with all necessary modifications, to a notice by a territorial authority to withdraw its own designation or part of a designation within its own district.

(5) Notwithstanding subsections (2) to (4), where a territorial authority considers the effect of the removal of part of a designation on the remaining designation is more than minor, it may, within 20 working days of receipt of the notice under subsection (1), decline to remove that part of the designation.

(6) A requiring authority may object, under section 357, to any decision to decline removal of part of a designation under subsection (5).

In terms of Section 182 (1) (b) and (c), Transpower have provided legal descriptions of land from which the designation will be removed in their response to further information dated 13 February 2025 [see Attachment 4 to this report].

In this same response, Transpower have confirmed “that the open space between East Tamaki Road and the eastern end of Accent Drive is part of Te Puke o Tara Sports Park. Auckland Council Parks team have been notified and confirmed they have “no concerns and support the removal” (see email correspondence from Allan Christensen dated 6 December 2024 in Attachment 5 as set out in Part 1 of this report.

In terms of other land owners/occupiers, Transpower have confirmed they have sent copies of letters to Auckland Transport and the owners of 25, 31 and 39 Kitenga Road, Flat Bush and 1 Tau Road, Flat Bush providing notice of the [partial] removal of designation 8517 [see Attachment 4 to this report].

Transpower state that “there are a number of additional vacant properties on Kitenga Road (i.e. where there is no dwelling on the property) and that Transpower has been unable to find an address for service for.

For these vacant sites, Transpower considers that the proposed changes to the designation are very minor (ranging from approximately 68m² to 188m² on affected vacant sites, which are all least over 2,200m²) and come about as a result of improvements to GIS software rather than an actual change to the location of the designation in real terms. The designation was always intended to be located within the Kitenga Road reserve.

Transpower is of the view that the removal of the designation will not therefore affect these property owners in any material way. For these reasons Transpower considers that they have made their best endeavours to comply with the intent of section 182(1)(b) of the RMA”

Regarding section 182(1)(c), Transpower is of the view that there is no other person likely to be affected by this designation.

Section 182(2) states that as soon as reasonably practicable, the territorial authority shall, without using the process in Schedule 1, amend its district plan accordingly.

If the territorial authority considers that the effect of the removal of part of a designation on the remaining designation is more than minor, it may, within 20 working days of receipt of a section 182 notice, decline to remove that part of the designation.

It is considered that Transpower has provided sufficient justification for the partial removal of Designation 8517 Brownhill Road to Ōtāhuhu (**BHL-OTA**) Underground Transmission Cables for the following reasons:

- the designation is being predominantly relocated from public reserve areas into the road reserve;
- Designation 8517 contains conditions to manage construction and traffic during the installation of the cable, along with conditions relating to archaeological and ecological matters, the effects of the removal of part of the designation on the remaining designation are no more than minor; and
- Auckland Transport as the road controlling authority supports the proposed partial removal of the designation.

4.0 Recommendation

That pursuant to Section 182 of the Resource Management Act 1991 that the partial removal of Designation 8517 Brownhill Road to Ōtāhuhu (BHL-OTA) Underground Transmission Cables be **accepted** and the Auckland Unitary Plan Operative in part designation overlay in the planning maps and text in Chapter K Designations be amended accordingly.

Prepared by:

Name: Jimmy Zhang

Title: Senior Policy Planner – Planning: Central/South

Signature: 

Date: 28 April, 2025

Accepted by:

Name: Craig Cairncross

Title: Team Leader – Planning: Central/South

Signature: 

Date: 28 April, 2025

8517 Brownhill Road to Otahuhu Underground Electricity Transmission Cables

Designation Number	8517
Requiring Authority	Transpower New Zealand Ltd
Location	443 227 Brownhill Road, Whitford to 26-28 Kaitawa Street, Otara
Rollover Designation	Yes
Legacy Reference	Designation 301, Auckland Council District Plan (Manukau Section) 2002
Lapse Date	1 March 20 40 <u>25</u>

Purpose

Electricity transmission - the construction, operation and maintenance of a double-circuit underground 220kV cable as part of the upper North Island Grid Upgrade Project, to convey electricity between the Otahuhu Substation and the ~~substation site at~~ Brownhill Road Substation, and ancillary activities.

Explanatory Note

The nature of the work is described more particularly in Part VII (excluding section 12 in relation to suggested conditions), and also in Parts II and X of the Notices of Requirement Documentation (dated April 2007), and the Notice of Requirement Documentation to alter the designation dated 18 December 2024.

Conditions

Documents

1. The initial works to give effect to the designation of the Brownhill to Otahuhu underground cable shall be generally in accordance with ~~Maps 24-30 of Appendix V~~ Pages 1-7 of BHL-OTA cable designation area and route (see attachments).

Magnetic Fields (MF)

2. Any new works or equipment shall be designed and operated to limit the magnetic field exposures to the International Commission on Non-Ionising Radiation Protection, Guidelines for limiting exposure to time varying electric, magnetic, fields (1Hz- 100kHz) (Health Physic 99(6):818-836: 2010) (ICNIRP Guidelines). That is the public exposure reference level of 200 µT for magnetic flux density when measured at 1 metre above ground level directly above any cable under normal operating conditions. (ie, when there are no faults in the transmission system).

3. In order to reduce long-term public exposure to MFs, no habitable buildings shall be constructed within the designated corridor for the underground cable.

Radio frequency

4. All works shall be designed to comply with NZS 6869:2004 Limits and Measurement Methods of Electromagnetic Noise from High-Voltage a.c. Power Systems, 0.15 to 1000 MHz.

Earth potential rise / induced voltages

5. The works shall be designed and constructed to comply with regulations ~~33, 42, 58, 60, 69 and 87~~ and Part 2 General safety requirements, Requirements for electrical safety of the Electricity Regulations ~~1997 2010. as in force at the date of confirmation of the designation~~

6. Any works or equipment shall be designed and constructed so as not to cause existing assets of other utilities to be non-compliant with AS/NZS 4853: 2012 – Electrical Hazard on Metallic Pipelines.

Existing utilities

7. Transpower shall liaise with all relevant utility operators during the detailed design and subsequent construction processes prior to undertaking any work pursuant to this designation and shall ensure that:

- a. it is aware of the location of all utility services existing at the time of construction in or adjacent to the designation; if necessary, exploratory excavation shall be undertaken;
- b. to the greatest extent practicable, all utility services existing at ~~28 May 2007~~ Lodgement Day ~~Month Year~~ 18 December 2024 (being the date the Notice of Requirement to alter the designation was lodged) located in or adjacent to the designation are protected from any activity associated with the Upper North Island Grid Upgrade Project which may interfere with the proper functioning of the services;
- c. if it is not practicable to avoid a reduction in the level of service in accordance with (b) above, or if services are otherwise damaged, all utility services existing at ~~28 May 2007~~ Lodgement Day ~~Month Year~~ 18 December 2024 located in or adjacent to the designation are repaired or relocated at Transpower's expense, to the reasonable satisfaction of the affected utility operator; and
- d. ~~reasonable access to~~ existing utility services located in or adjacent to the designation are able to be accessed during construction; and
- e. where directional drilling crosses any public stormwater network asset, CCTV of the asset must be submitted to the asset owner at the completion of the project.

8. Nothing in condition 7(c) requires Transpower to:

- a. provide compensation to any affected utility operator for indirect costs, such as for delays and inconvenience caused; and
- b. put the owner of the utility services in a better position than if the Upper North Island Grid Upgrade Project had not been proposed or installed.

Archaeology: known sites R11/2333 and R11/2384

~~9. Before any construction works are carried out associated with the Upper North Island Upgrade Project, Transpower shall make any minor adjustments to the location of the cable trench within the corridor to ensure that the sites R11/2333 and R11/2384 are not damaged by construction of the cable trench.~~

9. Prior to construction works commencing, an HNZPT archaeological authority should be applied for to undertake works on East Tāmaki Road. The remainder of the works should take place under the Auckland Unitary Plan Accidental Discovery Rule (Chapter E11.6.1 and E12.6.1) Transpower's accidental discovery protocol.

Advice note:

This condition is subject to any conditions of any archaeological authority granted under the ~~Historic Places Act 1993~~ Heritage New Zealand Pouhere Taonga Act 2014.

Construction Management Plan (CMP)

10. At least 30 working days prior to commencing any construction activity along the designated underground cable route, Transpower shall submit a Construction Management (CMP) to the Council for approval. The Council's ~~Consents~~ Manager, Resource Consents South shall respond within 20 working days indicating whether approval is given or Transpower's intended approach to:

- a. The proposed construction methodology;
- b. Storage and reuse and top soil, including stockpiling areas;
- c. On-site and off-site disposal of soil;
- d. Silt and dust control, during earthwork stages;
- e. Groundwater and stormwater management, treatment and disposal;
- f. Traffic/property access management;
- g. Contaminated land management procedures;
- h. Construction hours;
- i. Existing network utilities protocols and guidelines;
- j. Access and utilities management;
- k. Subject to other specific conditions, cultural protocols and archaeological requirements including any necessary management protocols to ensure the protection of the dry stone walls of Hampton Park/St John Church (AUP ID 1343) during construction associated with the new designation route along East Tamaki Road;
- l. Land stability management and water quality and sediment controls;
- m. Vegetation disturbance/removal and replacement;
- n. Management of construction activities;
- o. Contractor training, including health and safety;
- p. The intended construction programme, including staging if appropriate.
- q. Management of construction noise;
- r. Community information and liaison;
- s. Temporary activities and equipment storage in specified areas;
- t. Contractor car parking in specified areas;
- u. Security and lighting during construction; and
- v. Situations where the proposed cable depth could differ from the 1500 mm shown on Map 6 or 7 of Appendix V (see attachments), Drawing TP203722 For 220kV 1C*2500sqmm Cable System Typical Trench Drawing Sheet 1 (see attachments) including likely reasons for differing depth and means of resolving any issues arising from that depth.

11. In preparing the CMP in accordance with condition 10, the following minimum requirements shall be met:

- a. Quality soil shall be reused, where appropriate, and suitable stockpiling areas shall be identified;
- b. Spoil which is not reused, where appropriate, and suitable stockpiling areas shall be identified;
- c. Dust on-site shall be minimised to ensure that there is no dust nuisance off-site as a result of the works. Such minimisation could include spraying with water or covering of areas;
- d. Clean stormwater shall be directed away from bare or earthworked areas and sediment laden runoff shall be properly controlled and managed to minimise any discharge of sediments into watercourses;
- e. As far as practicable, disturbance to riparian areas and stream banks and beds shall be minimised during construction;
- f. Measures for testing and removing any contaminated land along the route shall be developed;
- g. Liaison with existing utility providers with underground services within the designated route shall be undertaken;
- h. Adequate measures shall be implemented so as to avoid land slope failure;

- i. When construction is taking place within the dripline of any tree over two metres in height to be retained on a public road or other public or private land, a qualified arborist shall be engaged to advise on the best method of root pruning and for continuing long-term avoidance of root interference with the cable;
- j. Site contractors shall have available at all working times, at an accessible place along the cable route, copies of all designation and consent conditions, the approved Construction Management Plan and the Draft Protocols entitled Transpower Grid Upgrade Project Protocol for Dealing with Kōiwi or Taonga Unearthed During Construction and the Discovery of Sites of Significance, Wāhi Tapu, Heritage Sites and Archaeological Sites (or updated document). Transpower shall ensure that the contractors understand the designation conditions and consent conditions;
- k. Transpower shall notify the Council in writing at least 10 working days before commencing works (including a separate notification for works commencing in Turanga Creek, ~~Mangemangeroa Stream~~ and Otara Creek), and shall notify the Councils that works have been completed within 10 working days following completion of the works;
- l. Parties adjacent to the route shall be notified prior to commencement of works and shall be regularly updated;
- m. Temporary activities, such as equipment storage shall be undertaken in suitably located areas (ie, not within 20 metres of a watercourse);
- n. Contractor car parking shall be suitably located, so as not to prevent property access; and
- o. Work sites shall be secure and illuminated to restrict access as appropriate.

12. In preparing the CMP in accordance with condition 10, ~~Housing New Zealand Corporation~~ Kāinga Ora shall be consulted.

Advice note:

Where the CMP requires Transpower to give notice to the Council, that notice can be given progressively, as stages of the work are complete.

Construction hours

13. Construction hours shall be as follows:

- a. Monday to Friday: 7am to 6pm;
- b. Saturday: 8am to 1pm; and
- c. Sundays and public holidays: No work. Except where work is necessary outside the specified days or hours for the following purposes:
 - i. Where work is required to be planned to be carried out at low-traffic times, for example, excavation across busy roads, or cable installation;
 - ii. Delivery of large equipment;
 - iii. Emergencies;
 - iv. Securing of the site or removing a traffic hazard;
 - v. Cable jointing in self-contained enclosures; or
 - vi. Where the distance between the work and the nearest residence is 100 metres or more and all other conditions are met.

Construction and Maintenance Noise

14. ~~All The noise from any~~ construction work ~~activity shall be designed, must be measured, assessed, and~~ managed ~~and conducted in accordance with the requirements of to ensure that construction and maintenance noise from the site does not exceed the limits in~~ NZS6803:1999 Acoustics–Construction Noise. Construction work is defined in New Zealand Standard NZS6803:1999 Acoustics – Construction noise.

15. ~~Prior to any significant construction work taking place, a noise management plan shall be prepared, with the assistance of a suitably qualified and experienced person, that sets out the management procedures in terms of section 8 and Annex E of NZS6803:1999, and the works shall be undertaken in accordance with that noise management plan (other than emergency works).~~ A Construction Noise and Vibration Management Plan (CNVMP) must be submitted to Auckland Council for certification prior to commencement of any construction works that cannot comply with the guideline upper limits of New Zealand Standard NZS6803:1999 Acoustics–Construction Noise. The objective of the CNVMP is to identify and require the adoption of the best practicable option to minimise construction noise and vibration effects as far as practical.

16. The ~~noise management plan~~ CNVMP required by condition 15 ~~shall~~ must be submitted to the Council's Consents Manager, Resource Consents South, for ~~approval, at least~~ certification a minimum of twenty (20) working days prior to commencement of the works commencing. The Council's Consents Manager shall respond within 20 working days indicating whether approval is given or refused. Construction works must not commence until certification has been received in writing from the Council. Approval-Certification must ~~shall~~ not be unreasonably withheld.

Advice note:

The ~~noise management plan~~ CNVMP required by condition 15 can be incorporated into, and be part of the construction management plan required by condition 10.

Vibration

17. Vibration from all construction activities shall not exceed the limits of, and shall be measured and assessed in accordance with, German Standard DIN 4150-3 (1999-02) Structural Vibration – Effects of Vibration on Structures.

Traffic / roading

18. Transpower shall prepare a Traffic Management Plan (TMP) which is generally consistent with ~~NZTA's Code of Practice for Temporary Traffic Management (COPTTM).~~ the National Code of Practice for Utility Operators' Access to Transport Corridors under the Utilities Access Act 2010.

19. The TMP shall be submitted to the Council's ~~Consents~~ Manager, Resource Consents South for approval at least 20 working days prior to commencement of underground cable construction after consultation with:

- a. The Council;
- b. The following key stakeholders:
 - i. Emergency services (including police);
 - ii. Bus operators;
 - iii. Schools;
 - iv. ~~Housing New Zealand Corporation~~ Kāinga Ora;
- c. Any additional key stakeholders identified by the Council.

20. The council shall respond within 20 working days indicating whether approval is given or refused. Approval shall not be unreasonably withheld.

21. The TMP prepared by Transpower shall recognise that the paramount purpose of roads is the free passage of the public and its vehicles.

22. The TMP prepared by Transpower shall address and provide details of proposed works and/or mitigation measures relating to the following matters:

a. The likely routes for heavy construction-related traffic, the assignment of which should minimise uncontrolled right turn movements and maximise the use of the arterial road network;

b. Details of any necessary road closures, diversions, or deviations which are likely to be required during construction activities, including the likely date, time and duration of such actions. As far as practicable, any necessary temporary road closures should be effected during off-peak periods;

c. Where diversions or deviations are required, information and recommendations shall be provided by a suitably qualified and experienced traffic engineer of the traffic volumes and capacities of alternative routes, and the likely consequent effects in terms of safety and convenience. The traffic engineer shall ensure that recommended alternative routes are reasonably convenient and capable of safely accommodating diverted or deviated traffic. Transpower shall act on the recommendations of the traffic engineer in relation to alternative routes. Where traffic modelling related to specific intersections is required, the results of the modelling shall be included (see conditions 23 to 25);

d. Details of the signage intended to advise motorists, residents, stakeholders, and other road users of any road closures, diversions and delays, including examples of signage for diversion routes. Such signage shall be sufficiently clear to enable easy understanding by the general public, and

installed at appropriate locations at least seven days in advance of such road closures, diversions and

delays. Such signage shall include the use of trailer-mounted electronic signs near the most affected roads;

e. Details of methods of proposed information dissemination regarding construction activities and associated traffic effects. These details shall include information regarding likely timing and duration of works, alternative routes, access to properties, and any alterations to public transport services. Methods of information dissemination shall include, but not be limited to, public notices in newspapers, radio announcements, signage, information packages, and direct contact with affected properties along those routes;

f. Inclusion of a communications plan setting out the method of consultation and liaison with key stakeholders and affected parties regarding likely timing and duration of works, alternative routes, access to properties and any alterations to public transport services;

g. Details of prior consultation or community liaison undertaken with affected residents, key stakeholders, schools, public transport providers, emergency services or representative groups regarding proposed road closures, diversions, and delays, on street parking changes and any measures agreed with such groups to address any adverse effects or inconvenience that may arise;

h. Any road diversions, closures, or single lane closures outside Mission Heights Primary School and Mission Heights Junior College must be undertaken, as far as practical, during school holidays or outside school hours.

~~h.i.~~ Details of any measures for the purposes of mitigating adverse traffic effects of construction traffic, including safety matters, relating to cyclists, pedestrians, mobility impaired persons, and school children;

~~h.j.~~ Where the cable is proposed to be installed across major intersections and/or arterial roads carrying higher traffic volumes (such as Ti Rakau Drive, Te Irirangi Drive, Chapel Road, Springs Road, East Tamaki Road), three months prior to the commencement of construction an assessment shall be carried out by a suitably qualified and experienced traffic engineer of:

i. The traffic volumes using such intersections or roads;

ii. The likely levels of delays and disruptions which may be experienced as a result of cable construction; and

iii. Identification of locations where such installation works must be carried out in the most

timely manner practicable (including where reasonably practicable, the use of alternative methods of installation other than trenching), so as to minimise delays or inconvenience to road users;

k. How heavy vehicles must avoid travelling past Mission Heights Primary School and Mission Heights Junior College during peak before and after school travel times, during term time (8.00am to 8.45am and 3.00pm to 3.30pm). Heavy vehicles are classified by size, being any construction vehicle that is larger than the average ute or van and has the potential to reduce visibility on the road.

l. Details of how truck drivers will be briefed on the importance of slowing down and adhering to established speed limits when driving past schools, and to look out for school children and reversing vehicles at all times.

l.m. Following consultation with public transport providers, details of proposed alternative temporary changes to public transport services during the construction period including but not limited to any route diversions, timetable adjustments, temporary bus stops, and methods of communicating such matters to public transport users.

23. Following consultation with the Boards and/or principals of Mission Heights Primary School, Mission Heights Junior College, Sir Edmund Hillary College and Sancta Maria College (and any schools subsequently established with accesses and/or egresses adjacent to the underground cable route), Transpower shall ensure, as far as practicable, that works avoid school terms so as to minimise disruption to normal school activities. Details of relevant periods shall be included in the TMP.

24. Following consultation with ~~the New Zealand Fire Service~~ Fire and Emergency New Zealand, details shall be provided in the TMP of proposed alternative access to and egress from the fire station located at 341 East Tamaki Road.

25. Transpower shall carry out traffic modelling at the intersections of Johnstones Road/Springs Road/East Tamaki Road and Chapel Road/Accent Drive/Stancombe Road to assess the impact of the construction works on intersection capacity prior to completing the Construction Management Plan and the Traffic Management Plan as required by conditions 10 and 20 ~~18~~, and incorporate any necessary specific provisions in the CMP.

Advice note:

The traffic management plan required by condition 18 can be incorporated into, and be part of, the construction management plan required by condition 10.

Continuation of access

26. Transpower shall at all times ensure that access to any property temporarily severed by construction is maintained at a level that will enable, as far as practicable, normal operations on the property to continue.

Parking

27. Following consultation with residents, businesses and other directly affected persons, Transpower shall ensure that adequate temporary alternative car parking is provided for residents, businesses and other directly affected persons along or adjacent to the cable route, in the event that construction activity prevents or hinders usual parking. Such arrangements are to be made and advised to affected parties at least five working days prior to the commencement of the work that causes the effect.

Remediation of property, roads and footpaths

28. Other than as provided in condition 29, Transpower shall:

- a. within 10 working days of completion of construction on any land, reinstate any private or public land and property (excluding works in road reserves) as far as practicable to its pre-existing state. Such remediation shall include fences, gardens (excluding trees and grass) and other surface equipment or materials; and
- b. as soon as practicable after the completion of construction, re-grass areas that were previously grassed.

29. As soon as practicable after the completion of construction, Transpower shall repair any damage to public carriageways, ~~and~~ footpaths (and associated road components) and public transport corridors resulting from the impacts of construction. Such repair may involve short-term maintenance to allow for settling and consolidation of carriageways prior to final repair.

Cultural/Spiritual

30. If any urupā, traditional sites, taonga (significant artefacts), or kōiwi (human remains) are exposed during site works, the following procedures shall apply:

- a. Works in the immediate vicinity of the site that has been exposed shall cease;
- b. The site supervisor shall immediately secure the area in a way that ensures that any remains or artefacts are untouched;
- c. The site supervisor shall notify representatives of relevant tāngata whenua, ~~the New Zealand Historic Places Trust~~ Heritage New Zealand, the Auckland Council and, in the case of human remains, the New Zealand Police; and
- d. The notification in (c) above shall allow such persons being given a reasonable time to record and recover archaeological features discovered before work may recommence on the exposed site.

Post-construction

31. Transpower will, as soon as practicable following completion of the cable works:

- a. Review the width of the area designated for the project; and
- b. Identify any areas of designated land that are no longer necessary for the on-going operation, maintenance, renewal and protection of the underground cables and ancillary activities; and
- c. Remove the designation over any surplus areas identified in (b) above in accordance with section 182 of the Act and provide a plan of the final designated areas to the Council for inclusion in the Auckland Unitary Plan.

Future roading

~~34.32.~~ Cable installed in the vicinity of the possible future road connections between:

- ~~a. The Redoubt Road extension between Regis Lane, Kitenga Road and Ormiston Road (as shown on maps 49-50, Manukau City Council Operation District Plan 2002 (see attachments); and~~
- ~~b. The possible future road connection between Scenic Drive-Redoubt Road and Brownhill Road; (as shown on Map 31 of Appendix V (see attachments); shall be buried to a depth that does not prevent construction of those roads due to the presence of the cables, in the locations shown on these plans, in the future.~~

Auckland Transport

33. The Requiring Authority (Transpower) shall not require Auckland Transport to seek written consent under Section 176(1)(b) of the RMA for the following activities associated with the routine operation, maintenance, replacement and urgent repair of its roads and Bus Rapid Transit:

- a. Road marking; and
- b. Road resurfacing and repairs, and replacement kerb and channel, with excavations less than 500mm in depth; and
- c. Installation or reinstallation of signs and support posts with excavations less than 500mm in depth.

1. Any new works or equipment means those works which were not existing prior to the notification of the Auckland Unitary Plan.

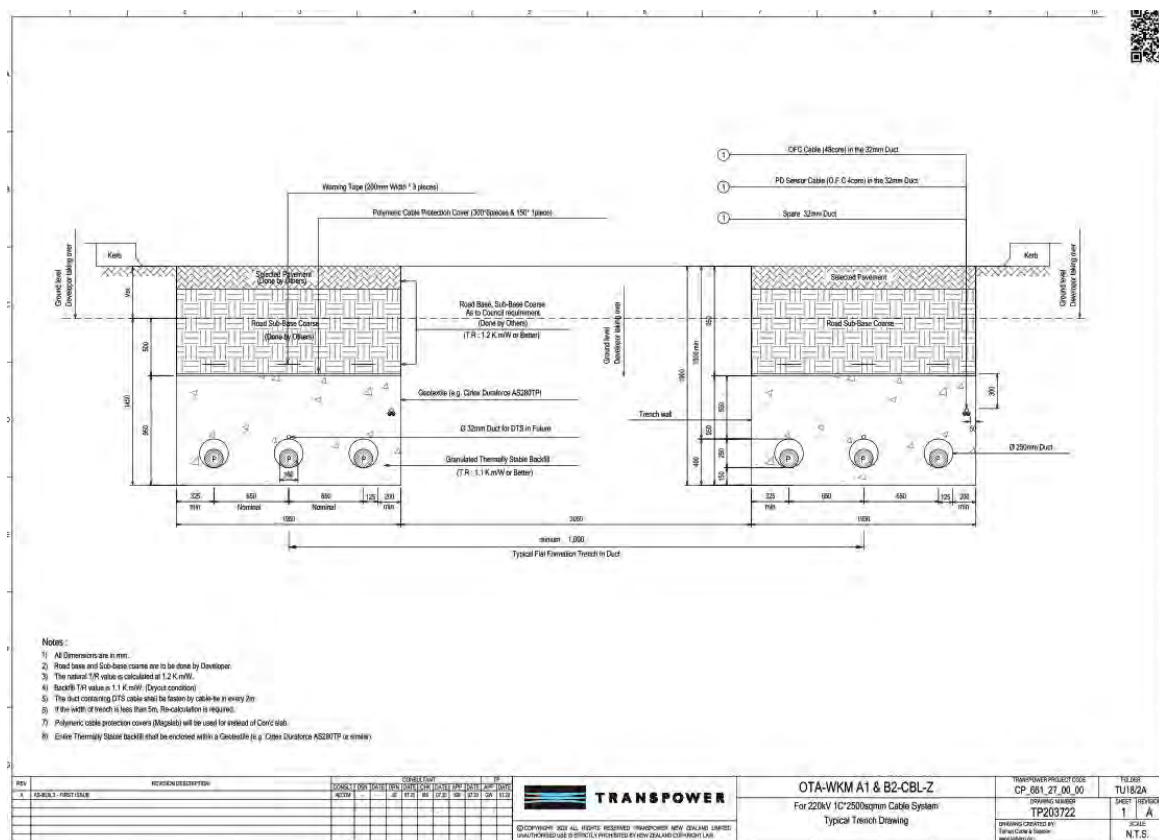
- ## Attachments

Drawing TP203722 Typical Trench Drawing Sheet 1

Maps 1-7, BHL-OTA cable designation area and route

<u>PLAN</u>	<u>PLAN DESCRIPTION</u>	<u>SHEET</u>
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<u>TP203722</u>	<u>For 220kV 1C*2500sqmm Cable System Typical Trench Drawing</u>	<u>1</u>
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INDEX OF MAPS REFERRED TO IN DESIGNATION CONDITIONS

<u>MAP DESCRIPTION</u>	<u>SHEET</u>
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<u>BHL-OTA CABLE DESIGNATION AREA AND ROUTE</u>	<u>PAGE 1 OF 7</u>
<u>BHL-OTA CABLE DESIGNATION AREA AND ROUTE</u>	<u>PAGE 2 OF 7</u>
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<u>BHL-OTA CABLE DESIGNATION AREA AND ROUTE</u>	<u>PAGE 7 OF 7</u>

Legend

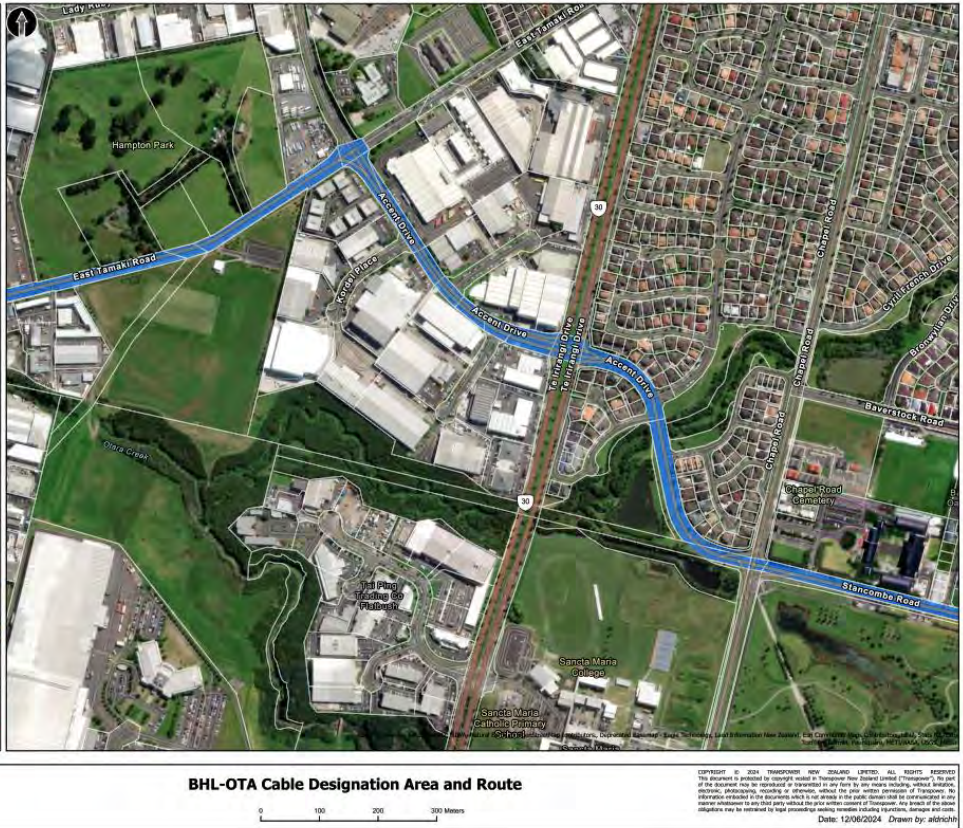
- BHL-OTA Cable Designation Area and Route
- Parcel boundary

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- BHL-OTA Cable Designation Area and Route
- Parcel boundary

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BHL-OTA Cable Designation Area and Route
Parcel boundary

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Legend

BHL-OTA Cable Designation Area and Route
Parcel boundary

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Date: 12/06/2024 Drawn by: aldrich

5209287	Lot 2 DP 348822
5217576	Lot 5 DP 348822
5235744	6755102
5245975	5247056
5259209	5237233
Lot 185 DP 50993	5218750
Allot 355 Parish of Pakuranga	Lot 1 DP 370733
5099005	5263064
5267324	5208695
Lot 279 DP 50344	5225858
5206109	5244805
5215068	Sec 1 SO 68877
5248339	Lot 1 DP 168092
5228620	5208692
5250436	5208693
5237621	5216198
5256686	5257455
5208934	5257462
5245707	5259600
5210416	7060314
Lot 500 DP 436444	Lot 2 DP 182255
Reclaimed Crown Foreshore Survey Office Plan 47238	Lot 3 DP 348822

<u>Parcel ID</u>	<u>Appellation</u>
<u>5074724</u>	<u>Lot 38 DP 122457</u>
<u>4817570</u>	<u>Lot 39 DP 122457</u>
<u>5213395</u>	<u>Road</u>
<u>5168529</u>	<u>Lot 44 DP 122457</u>
<u>4701869</u>	<u>Lot 45 DP 122457</u>
<u>5220406</u>	<u>Road</u>
<u>5245483</u>	<u>Road</u>
<u>5229707</u>	<u>Road</u>
<u>5242071</u>	<u>Road</u>
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<u>5247685</u>	<u>Road</u>
<u>5234114</u>	<u>Road</u>
<u>5253250</u>	<u>Road</u>
<u>5211477</u>	<u>Road</u>
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<u>4755221</u>	<u>Allot 355 PSH OF Manurewa</u>
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<u>5099005</u>	<u>Reclaimed Crown Foreshore Survey Office Plan 47238</u>
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<u>5208695</u>	<u>Road</u>

<u>6832592</u>	<u>Lot 501 DP 363171</u>
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<u>7656679</u>	<u>Lot 100 DP 486594</u>
<u>7656682</u>	<u>Lot 301 DP 486594</u>
<u>7656683</u>	<u>Lot 302 DP 486594</u>
<u>7656677</u>	<u>Lot 23 DP 486594</u>

8517 Brownhill Road to Otahuhu Underground Electricity Transmission Cables

Designation Number	8517
Requiring Authority	Transpower New Zealand Ltd
Location	227 Brownhill Road, Whitford to 26-28 Kaitawa Street, Otara
Rollover Designation	Yes
Legacy Reference	Designation 301, Auckland Council District Plan (Manukau Section) 2002
Lapse Date	1 March 2040

Purpose

Electricity transmission - the construction, operation and maintenance of a double-circuit underground 220kV cable as part of the upper North Island Grid Upgrade Project, to convey electricity between the Otahuhu Substation and the Brownhill Road Substation, and ancillary activities.

Explanatory Note

The nature of the work is described more particularly in Part VII (excluding section 12 in relation to suggested conditions), and also in Parts II and X of the Notices of Requirement Documentation (dated April 2007), and the Notice of Requirement Documentation to alter the designation dated 18 December 2024.

Conditions

Documents

1. The initial works to give effect to the designation of the Brownhill to Otahuhu underground cable shall be generally in accordance with Pages 1-7 of BHL-OTA cable designation area and route (see attachments).

Magnetic Fields (MF)

2. Any new works or equipment shall be designed and operated to limit the magnetic field exposures to the International Commission on Non-Ionising Radiation Protection, Guidelines for limiting exposure to time varying electric, magnetic, fields (1Hz- 100kHz) (Health Physic 99(6):818-836: 2010) (ICNIRP Guidelines). That is the public exposure reference level of 200 μ T for magnetic flux density when measured at 1 metre above ground level directly above any cable under normal operating conditions. (ie, when there are no faults in the transmission system).

3. In order to reduce long-term public exposure to MFs, no habitable buildings shall be constructed within the designated corridor for the underground cable.

Radio frequency

4. All works shall be designed to comply with NZS 6869:2004 Limits and Measurement Methods of Electromagnetic Noise from High-Voltage a.c. Power Systems, 0.15 to 1000 MHz.

Earth potential rise / induced voltages

5. The works shall be designed and constructed to comply with regulations 33, 42 and Part 2 General safety requirements, *Requirements for electrical safety* of the Electricity Regulations 2010.

6. Any works or equipment shall be designed and constructed so as not to cause existing assets of other utilities to be non-compliant with AS/NZS 4853: 2012 – Electrical Hazard on Metallic Pipelines.

Existing utilities

7. Transpower shall liaise with all relevant utility operators during the detailed design and subsequent construction processes prior to undertaking any work pursuant to this designation and shall ensure that:

- a. it is aware of the location of all utility services existing at the time of construction in or adjacent to the designation; if necessary, exploratory excavation shall be undertaken;
- b. to the greatest extent practicable, all utility services existing at 18 December 2024 (being the date the Notice of Requirement to alter the designation was lodged) located in or adjacent to the designation are protected from any activity associated with the Upper North Island Grid Upgrade Project which may interfere with the proper functioning of the services;
- c. if it is not practicable to avoid a reduction in the level of service in accordance with (b) above, or if services are otherwise damaged, all utility services existing at 18 December 2024 located in or adjacent to the designation are repaired or relocated at Transpower's expense, to the reasonable satisfaction of the affected utility operator; and
- d. existing utility services located in or adjacent to the designation are able to be accessed during construction, and
- e. where directional drilling crosses any public stormwater network asset, CCTV of the asset must be submitted to the asset owner at the completion of the project.

8. Nothing in condition 7(c) requires Transpower to:

- a. provide compensation to any affected utility operator for indirect costs, such as for delays and inconvenience caused; and
- b. put the owner of the utility services in a better position than if the Upper North Island Grid Upgrade Project had not been proposed or installed.

Archaeology: known sites R11/2333 and R11/2384

9. Prior to construction works commencing, an HNZPT archaeological authority should be applied for to undertake works on East Tāmaki Road. The remainder of the works should take place under the Auckland Unitary Plan Accidental Discovery Rule (Chapter E11.6.1 and E12.6.1).

Advice note:

This condition is subject to any conditions of any archaeological authority granted under the Heritage New Zealand Pouhere Taonga Act 2014.

Construction Management Plan (CMP)

10. At least 30 working days prior to commencing any construction activity along the designated underground cable route, Transpower shall submit a Construction Management (CMP) to the Council for approval. The Council's Manager, Resource Consents South shall respond within 20 working days indicating whether approval is given or Transpower's intended approach to:

- a. The proposed construction methodology;
- b. Storage and reuse and top soil, including stockpiling areas;
- c. On-site and off-site disposal of soil;
- d. Silt and dust control, during earthwork stages;
- e. Groundwater and stormwater management, treatment and disposal;

- f. Traffic/property access management;
- g. Contaminated land management procedures;
- h. Construction hours;
- i. Existing network utilities protocols and guidelines;
- j. Access and utilities management;
- k. Subject to other specific conditions, cultural protocols and archaeological requirements including any necessary management protocols to ensure the protection of the dry stone walls of Hampton Park/St John Church (AUP ID 1343) during construction associated with the new designation route along East Tamaki Road;
- l. Land stability management and water quality and sediment controls;
- m. Vegetation disturbance/removal and replacement;
- n. Management of construction activities;
- o. Contractor training, including health and safety;
- p. The intended construction programme, including staging if appropriate.
- q. Management of construction noise;
- r. Community information and liaison;
- s. Temporary activities and equipment storage in specified areas;
- t. Contractor car parking in specified areas;
- u. Security and lighting during construction; and
- v. Situations where the proposed cable depth could differ from the 1500 mm shown on Drawing TP203722 For 220kV 1C*2500sqmm Cable System Typical Trench Drawing Sheet 1 (see attachments) including likely reasons for differing depth and means of resolving any issues arising from that depth.

11. In preparing the CMP in accordance with condition 10, the following minimum requirements shall be met:

- a. Quality soil shall be reused, where appropriate, and suitable stockpiling areas shall be identified;
- b. Spoil which is not reused, where appropriate, and suitable stockpiling areas shall be identified;
- c. Dust on-site shall be minimised to ensure that there is no dust nuisance off-site as a result of the works. Such minimisation could include spraying with water or covering of areas;
- d. Clean stormwater shall be directed away from bare or earthworked areas and sediment laden runoff shall be properly controlled and managed to minimise any discharge of sediments into watercourses;
- e. As far as practicable, disturbance to riparian areas and stream banks and beds shall be minimised during construction;
- f. Measures for testing and removing any contaminated land along the route shall be developed;
- g. Liaison with existing utility providers with underground services within the designated route shall be undertaken;
- h. Adequate measures shall be implemented so as to avoid land slope failure;
- i. When construction is taking place within the dripline of any tree over two metres in height to be retained on a public road or other public or private land, a qualified arborist shall be engaged to advise on the best method of root pruning and for continuing long-term avoidance of root interference with the cable;
- j. Site contractors shall have available at all working times, at an accessible place along the cable route, copies of all designation and consent conditions, the approved Construction Management Plan and the Draft Protocols entitled Transpower Grid Upgrade Project Protocol for Dealing with Kōiwi or Taonga Unearthed During Construction and the Discovery of Sites of Significance, Wāhi

Tapu, Heritage Sites and Archaeological Sites (or updated document). Transpower shall ensure that the contractors understand the designation conditions and consent conditions;

k. Transpower shall notify the Council in writing at least 10 working days before commencing works (including a separate notification for works commencing in Turanga Creek and Otara Creek), and shall notify the Councils that works have been completed within 10 working days following completion of the works;

l. Parties adjacent to the route shall be notified prior to commencement of works and shall be regularly updated;

m. Temporary activities, such as equipment storage shall be undertaken in suitably located areas (ie, not within 20 metres of a watercourse);

n. Contractor car parking shall be suitably located, so as not to prevent property access; and

o. Work sites shall be secure and illuminated to restrict access as appropriate.

12. In preparing the CMP in accordance with condition 10, Kāinga Ora shall be consulted.

Advice note:

Where the CMP requires Transpower to give notice to the Council, that notice can be given progressively, as stages of the work are complete.

Construction hours

13. Construction hours shall be as follows:

a. Monday to Friday: 7am to 6pm;

b. Saturday: 8am to 1pm; and

c. Sundays and public holidays: No work. Except where work is necessary outside the specified days or hours for the following purposes:

i. Where work is required to be planned to be carried out at low-traffic times, for example, excavation across busy roads, or cable installation;

ii. Delivery of large equipment;

iii. Emergencies;

iv. Securing of the site or removing a traffic hazard;

v. Cable jointing in self-contained enclosures; or

vi. Where the distance between the work and the nearest residence is 100 metres or more and all other conditions are met.

Construction and Maintenance Noise

14. The noise from any construction work activity must be measured, assessed, and managed in accordance with the requirements of NZS6803:1999 Acoustics–Construction Noise. Construction work is defined in New Zealand Standard NZS6803:1999 Acoustics – Construction noise.

15. A Construction Noise and Vibration Management Plan (CNVMP) must be submitted to Auckland Council for certification prior to commencement of any construction works that cannot comply with the guideline upper limits of New Zealand Standard NZS6803:1999 Acoustics–Construction Noise. The objective of the CNVMP is to identify and require the adoption of the best practicable option to minimise construction noise and vibration effects as far as practical.

16. The CNVMP required by condition 15 must be submitted to the Council's Consents Manager, Resource Consents South, for certification a minimum of twenty (20) working days prior to commencement of the works. Construction works must not commence until certification has been received in writing from the Council. Certification must not be unreasonably withheld.

Advice note:

The CNVMP required by condition 15 can be incorporated into, and be part of the construction management plan required by condition 10.

Vibration

17. Vibration from all construction activities shall not exceed the limits of, and shall be measured and assessed in accordance with, German Standard DIN 4150-3 (1999-02) Structural Vibration – Effects of Vibration on Structures.

Traffic / roading

18. Transpower shall prepare a Traffic Management Plan (TMP) which is generally consistent with *the National Code of Practice for Utility Operators' Access to Transport Corridors* under the Utilities Access Act 2010.

19. The TMP shall be submitted to the Council's Manager, Resource Consents South for approval at least 20 working days prior to commencement of underground cable construction after consultation with:

- a. The Council;
- b. The following key stakeholders:
 - i. Emergency services (including police);
 - ii. Bus operators;
 - iii. Schools;
 - iv. Kāinga Ora;
- c. Any additional key stakeholders identified by the Council.

20. The council shall respond within 20 working days indicating whether approval is given or refused. Approval shall not be unreasonably withheld.

21. The TMP prepared by Transpower shall recognise that the paramount purpose of roads is the free passage of the public and its vehicles.

22. The TMP prepared by Transpower shall address and provide details of proposed works and/or mitigation measures relating to the following matters:

- a. The likely routes for heavy construction-related traffic, the assignment of which should minimise uncontrolled right turn movements and maximise the use of the arterial road network;
- b. Details of any necessary road closures, diversions, or deviations which are likely to be required during construction activities, including the likely date, time and duration of such actions. As far as practicable, any necessary temporary road closures should be effected during off-peak periods;
- c. Where diversions or deviations are required, information and recommendations shall be provided by a suitably qualified and experienced traffic engineer of the traffic volumes and capacities of alternative routes, and the likely consequent effects in terms of safety and convenience. The traffic engineer shall ensure that recommended alternative routes are reasonably convenient and capable of safely accommodating diverted or deviated traffic. Transpower shall act on the recommendations of the traffic engineer in relation to alternative routes. Where traffic modelling related to specific intersections is required, the results of the modelling shall be included (see conditions 23 to 25);
- d. Details of the signage intended to advise motorists, residents, stakeholders, and other road users of any road closures, diversions and delays, including examples of signage for diversion

routes. Such signage shall be sufficiently clear to enable easy understanding by the general public, and installed at appropriate locations at least seven days in advance of such road closures, diversions and

delays. Such signage shall include the use of trailer-mounted electronic signs near the most affected roads;

e. Details of methods of proposed information dissemination regarding construction activities and associated traffic effects. These details shall include information regarding likely timing and duration of works, alternative routes, access to properties, and any alterations to public transport services. Methods of information dissemination shall include, but not be limited to, public notices in newspapers, radio announcements, signage, information packages, and direct contact with affected properties along those routes;

f. Inclusion of a communications plan setting out the method of consultation and liaison with key stakeholders and affected parties regarding likely timing and duration of works, alternative routes, access to properties and any alterations to public transport services;

g. Details of prior consultation or community liaison undertaken with affected residents, key stakeholders, schools, public transport providers, emergency services or representative groups regarding proposed road closures, diversions, delays, on street parking changes and any measures agreed with such groups to address any adverse effects or inconvenience that may arise;

h. Any road diversions, closures, or single lane closures outside Mission Heights Primary School and Mission Heights Junior College must be undertaken, as far as practical, during school holidays or outside school hours.

i. Details of any measures for the purposes of mitigating adverse traffic effects of construction traffic, including safety matters, relating to cyclists, pedestrians, mobility impaired persons, and school children;

j. Where the cable is proposed to be installed across major intersections and/or arterial roads carrying higher traffic volumes (such as Ti Rakau Drive, Te Irirangi Drive, Chapel Road, Springs Road, East Tamaki Road), three months prior to the commencement of construction an assessment shall be carried out by a suitably qualified and experienced traffic engineer of:

i. The traffic volumes using such intersections or roads;

ii. The likely levels of delays and disruptions which may be experienced as a result of cable construction; and

iii. Identification of locations where such installation works must be carried out in the most timely manner practicable (including where reasonably practicable, the use of alternative methods of installation other than trenching), so as to minimise delays or inconvenience to road users;

k. How heavy vehicles must avoid travelling past Mission Heights Primary School and Mission Heights Junior College during peak before and after school travel times, during term time (8.00am to 8.45am and 3.00pm to 3.30pm). Heavy vehicles are classified by size, being any construction vehicle that is larger than the average ute or van and has the potential to reduce visibility on the road.

l. Details of how truck drivers will be briefed on the importance of slowing down and adhering to established speed limits when driving past schools, and to look out for school children and reversing vehicles at all times.

m. Following consultation with public transport providers, details of proposed alternative temporary changes to public transport services during the construction period including but not limited to any route diversions, timetable adjustments, temporary bus stops, and methods of communicating such matters to public transport users.

23. Following consultation with the Boards and/or principals of Mission Heights Primary School, Mission Heights Junior College, Sir Edmund Hillary College and Sancta Maria College (and any schools subsequently established with accesses and/or egresses adjacent to the underground

cable route), Transpower shall ensure, as far as practicable, that works avoid school terms so as to minimise disruption to normal school activities. Details of relevant periods shall be included in the TMP.

24. Following consultation with Fire and Emergency New Zealand, details shall be provided in the TMP of proposed alternative access to and egress from the fire station located at 341 East Tamaki Road.

25. Transpower shall carry out traffic modelling at the intersections of Johnstones Road/Springs Road/East Tamaki Road and Chapel Road/Accent Drive/Stacombe Road to assess the impact of the construction works on intersection capacity prior to completing the Construction Management Plan and the Traffic Management Plan as required by conditions 10 and 18, and incorporate any necessary specific provisions in the CMP.

Advice note:

The traffic management plan required by condition 18 can be incorporated into, and be part of, the construction management plan required by condition 10.

Continuation of access

26. Transpower shall at all times ensure that access to any property temporarily severed by construction is maintained at a level that will enable, as far as practicable, normal operations on the property to continue.

Parking

27. Following consultation with residents, businesses and other directly affected persons, Transpower shall ensure that adequate temporary alternative car parking is provided for residents, businesses and other directly affected persons along or adjacent to the cable route, in the event that construction activity prevents or hinders usual parking. Such arrangements are to be made and advised to affected parties at least five working days prior to the commencement of the work that causes the effect.

Remediation of property, roads and footpaths

28. Other than as provided in condition 29, Transpower shall:

- a. within 10 working days of completion of construction on any land, reinstate any private or public land and property (excluding works in road reserves) as far as practicable to its pre-existing state. Such remediation shall include fences, gardens (excluding trees and grass) and other surface equipment or materials; and
- b. as soon as practicable after the completion of construction, re-grass areas that were previously grassed.

29. As soon as practicable after the completion of construction, Transpower shall repair any damage to public carriageways, footpaths (and associated road components) and public transport corridors resulting from the impacts of construction. Such repair may involve short-term maintenance to allow for settling and consolidation of carriageways prior to final repair.

Cultural/Spiritual

30. If any urupā, traditional sites, taonga (significant artefacts), or kōiwi (human remains) are exposed during site works, the following procedures shall apply:

- a. Works in the immediate vicinity of the site that has been exposed shall cease;
- b. The site supervisor shall immediately secure the area in a way that ensures that any remains or artefacts are untouched;

- c. The site supervisor shall notify representatives of relevant tāngata whenua, Heritage New Zealand, the Auckland Council and, in the case of human remains, the New Zealand Police; and
- d. The notification in (c) above shall allow such persons being given a reasonable time to record and recover archaeological features discovered before work may recommence on the exposed site.

Post-construction

31. Transpower will, as soon as practicable following completion of the cable works:

- a. Review the width of the area designated for the project; and
- b. Identify any areas of designated land that are no longer necessary for the on-going operation, maintenance, renewal and protection of the underground cables and ancillary activities; and
- c. Remove the designation over any surplus areas identified in (b) above in accordance with section 182 of the Act and provide a plan of the final designated areas to the Council for inclusion in the Auckland Unitary Plan.

Future roading

32. Cable installed in the vicinity of the possible future road connections between:

- a. Kitenga Road and Ormiston Road; and
- b. Redoubt Road and Brownhill Road;

shall be buried to a depth that does not prevent construction of those roads due to the presence of the cables in the future.

Auckland Transport

33. The Requiring Authority (Transpower) shall not require Auckland Transport to seek written consent under Section 176(1)(b) of the RMA for the following activities associated with the routine operation, maintenance, replacement and urgent repair of its roads and Bus Rapid Transit:

- a. Road marking; and
- b. Road resurfacing and repairs, and replacement kerb and channel, with excavations less than 500mm in depth; and
- c. Installation or reinstallation of signs and support posts with excavations less than 500mm in depth.

Advice notes:

- 1. Any new works or equipment means those works which were not existing prior to the notification of the Auckland Unitary Plan.
- 2. Where the Transpower BHL-OTA designation and the Auckland Transport Bus Rapid Transit – Botany to Rongomai Park designation overlap at the intersection of Ti Irirangi Drive and Accent Drive, during the construction of the earlier project at this location, Transpower and Auckland Transport will endeavour to align timing of construction activities where practicable to minimise the disturbance of the earlier project's operation when construction for the later project occurs.

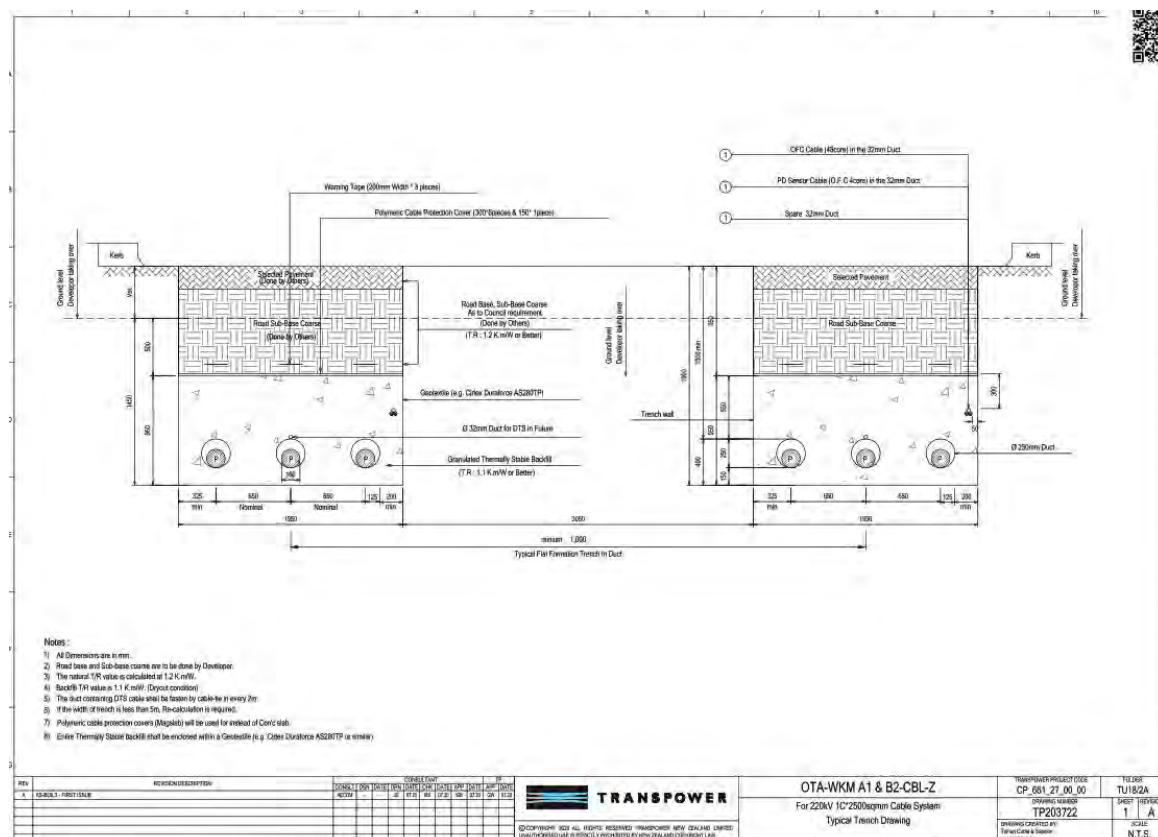
Attachments

Drawing TP203722 Typical Trench Drawing Sheet 1

Maps 1-7, BHL-OTA cable designation area and route

INDEX OF PLANS REFERRED TO IN DESIGNATION CONDITIONS

PLAN	PLAN DESCRIPTION	SHEET
TP203722	For 220kV 1C*2500sqmm Cable System Typical Trench Drawing	1



INDEX OF MAPS REFERRED TO IN DESIGNATION CONDITIONS

MAP DESCRIPTION	SHEET
BHL-OTA CABLE DESIGNATION AREA AND ROUTE	PAGE 1 OF 7
BHL-OTA CABLE DESIGNATION AREA AND ROUTE	PAGE 2 OF 7
BHL-OTA CABLE DESIGNATION AREA AND ROUTE	PAGE 3 OF 7
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Legend
BHL-OTA Cable Designation Area and Route
Parcel boundary

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BHL-OTA Cable Designation Area and Route



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Legend
BHL-OTA Cable Designation Area and Route
Parcel boundary

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BHL-OTA Cable Designation Area and Route



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Legend

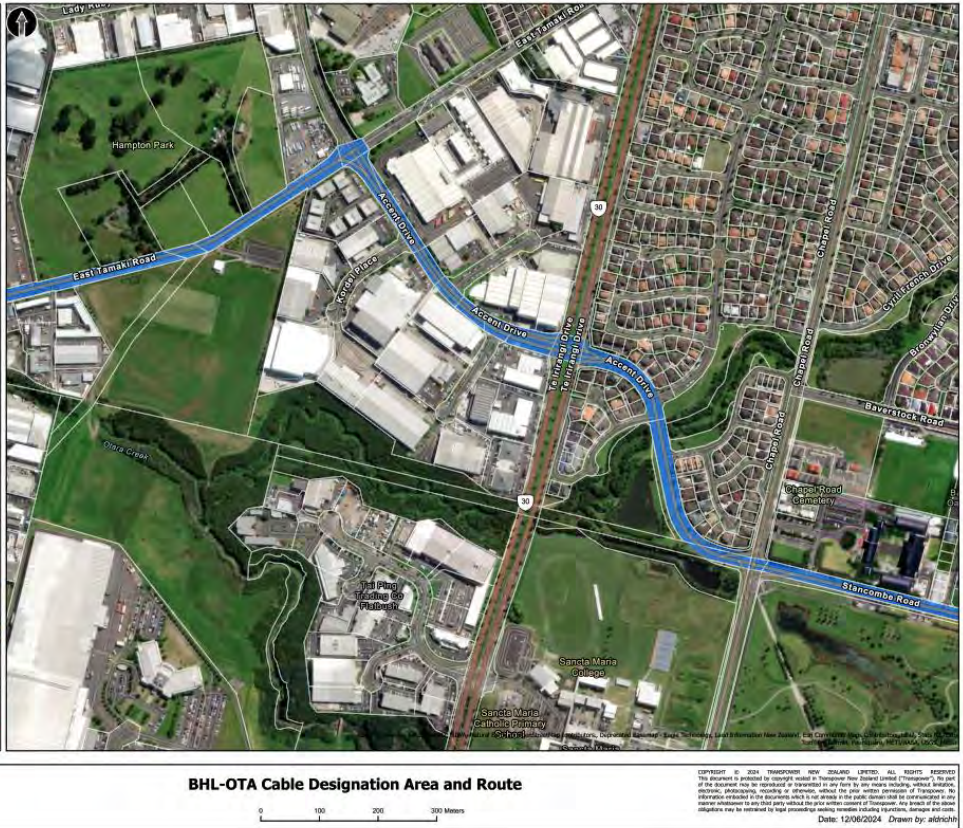
- BHL-OTA Cable Designation Area and Route
- Parcel boundary

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- BHL-OTA Cable Designation Area and Route
- Parcel boundary

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Parcel boundary

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BHL-OTA Cable Designation Area and Route

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Legend

BHL-OTA Cable Designation Area and Route
Parcel boundary

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BHL-OTA Cable Designation Area and Route

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Schedule of Legal Descriptions

Parcel ID	Appellation
5074724	Lot 38 DP 122457
4817570	Lot 39 DP 122457
5213395	Road
5168529	Lot 44 DP 122457
4701869	Lot 45 DP 122457
5220406	Road
5245483	Road
5229707	Road
5242071	Road
5234115	Road
5247685	Road
5234114	Road
5253250	Road
5211477	Road
5243048	Road
5235744	Road
5245975	Road
5209287	Road
5259209	Road
5217576	Road
4755221	Allot 355 PSH OF Manurewa
8028879	Section 2 SO 541424
5099005	Reclaimed Crown Foreshore Survey Office Plan 47238

5267324	Hydro
4808525	Lot 279 DP 50344
5214856	Road
5247445	Road
5237621	Road
5247453	Road
5208934	Road
5247449	Road
5210416	Road
5245707	Road
5206109	Road
5256686	Road
5215068	Road
5248339	Road
5213926	Road
5250436	Road
5228620	Road
5258386	Road
5214767	Road
5214767	Road
7458019	Road
5214015	Road
5255321	Road
5260617	Road
5260621	Road
5260624	Road
5252888	Road
5260631	Road
5260627	Road
5260632	Road
5263411	Road
6746089	Lot 1018 DP 340679
6755102	Lot 1019 DP 348822
6755102	Lot 1019 DP 348822
5263414	Road
5263414	Road
5218750	Road
5247056	Road
5218779	Road
5218779	Road
5218779	Road
5218779	Road
5263064	Road
5225858	Road
5244805	Road
5208695	Road
5208695	Road
6832592	Lot 501 DP 363171
6934723	Lot 503 DP 378310
7350313	Lot 200 DP 445943

6961695	Road
5259436	Road
5210561	Road
5249045	Road
5216198	Road
7060314	Part Allot 205 PSH OF Pakuranga
5216198	Road
7060314	Part Allot 205 PSH OF Pakuranga
5257455	Road
5257455	Road
5208692	Road
5257462	Road
5208693	Road
7781813	Lot 502 DP 507828
7743019	Lot 500 DP 500844
5263387	Road
6841781	Lot 74 DP 353601
7656679	Lot 100 DP 486594
7656682	Lot 301 DP 486594
7656683	Lot 302 DP 486594
7656677	Lot 23 DP 486594

Attachments C

**Transpower New Zealand Limited Schedule and
Designation 8517 Brownhill Road to Otahuhu
Underground Electricity Transmission Cables
conditions (~~strikethrough~~/underscore)**

Designation Schedule - Transpower New Zealand Ltd

Number	Purpose	Location
8500	Electricity transmission - electricity transmission tower site and associated overhead transmission lines...	161 Ash Street, Avondale
8501	Electricity transmission - Penrose electricity substation	19 Gavin Street, Penrose
8502	Electricity transmission - overhead electricity transmission lines ...	Gavin Street (opposite No. 19), Ellerslie to Tamaki River (Panmure Bridge), Panmure
8503	Electricity transmission - Mount Roskill electricity substation	11-39 White Swan Road, Mount Roskill
8504	Electricity transmission - overhead electricity transmission lines ...	37 Boundary Road, Avondale
8505	Electricity transmission - tower site and associated overhead lines ...	39 Haycock Avenue, Mount Roskill
8506	Electricity transmission - tower site and associated overhead lines ...	135A, 137 and 137A Barrack Road, Mount Wellington
8507	Electricity transmission - the construction, operation and maintenance of underground transmission lines ...	19 Gavin Street to 109 Golfland Drive, Pakuranga
8508	Electricity transmission - tower site and associated overhead transmission lines ...	716 Richardson Road, Mount Roskill
8509	Electricity transmission - tower site (Tower 9) and associated overhead transmission lines ...	Luke Street (adjoins State Highway 1), Otahuhu
8510	Electricity transmission - Glenbook electricity substation	Whitham Road, Glenbrook
8511	Electricity transmission - Bombay electricity substation	153 Barber Road, Bombay
8512	Electricity transmission - the construction, operation and maintenance of that part of a 400kV capable transmission line ...	231 Whitford Park Road, Whitford to the vicinity of Paparimu Road (Waikato District Council Boundary), Pokeno
8513	Electricity transmission - the operation, maintenance and upgrade of the existing Otahuhu Substation, the construction of a new 220kV substation, installation of 220kV underground cable circuits ...	1 Gridco Road and 2 Helabys Road, Otara
8514	Electricity transmission - the ongoing use, maintenance and operation of the Pakuranga Electricity Substation, the development of the substation site ...	109 Golfland Drive, Pakuranga
8515	Electricity Transmission - the construction, operation and maintenance of a transition station to connect the underground cable and overhead lines ...	16 Umbria Lane (near Brownhill Road), Whitford
8516	Electricity Transmission - the construction, operation and maintenance of a double circuit underground 220kV cable ...	443-227 Brownhill Road, Whitford to 109 Golfland Drive, Howick
8517	Electricity transmission - the construction, operation and maintenance of a double-circuit underground 220kV cable ...	143 Brownhill Road, Whitford to 26-28 Kaitawa Street, Otara
8518	Electricity transmission - Albany electricity substation	29 Bass Road, Albany
8519	Electricity transmission - the installation, maintenance, repair, replacement, inspection and operation of two 220kV underground electricity transmission lines ...	410 Albany Highway to State Highway 1 (Constellation Drive), Rosedale
8520	Electricity transmission - Takanini electricity substation	65 Airfield Road, Takanini

8521	Electricity transmission - the construction, operation, maintenance, replacement, renewal and upgrading of a 220kV switchyard, transmission lines, and ancillary facilities	261 Quarry Road, Drury
8522	Electricity transmission - Wellsford electricity substation	69 School Road, Wellsford
8523	Electricity transmission - Silverdale electricity substation	83-91 Foundry Road, Silverdale
8524	Electricity transmission - Huapai electricity substation	108 Matua Road, Huapai
8525	Electricity transmission - Henderson electricity substation	1-12 and 41-47 Lincoln Park Avenue, Massey
8526	Electricity transmission - Hepburn Road electricity substation	167-217 Hepburn Road, Glendene
8527	Electricity transmission - Rua o te Whenua telecommunications facility	600 Scenic Drive, Waiatarua
8528	Electricity Transmission – the Massey North Underground Cable Project, comprising a 110kV underground transmission line for the conveyance of electricity and ancillary structures associated with the works to be located between existing Towers 6 and 12 of the Albany – Henderson A 110kV overhead transmission line. Transferred to Vector Limited March 2024	41 Westgate Drive, Massey to 20 Northside Drive, Whenuapai
8529	Electricity transmission - Mangere electricity substation	11, 14 and 16 Driver Road and 307 Massey Road, Mangere
8530	Electricity transmission - Hobson Street electricity substation	13-21 Hobson Street, Auckland City
8531	Electricity transmission - Wairau Road electricity substation	4A Wairau Road, Takapuna
8532	Electricity Transmission - the operation, maintenance and upgrading of underground transmission lines comprising of two 110kV cable circuits and termination structures to convey electricity between Otahuhu and Penrose	Highbrook Business Park, Highbrook
8533	Electricity transmission - Wiri electricity substation	656 Great South Road, Manukau
8534	Electricity transmission – Flat Bush Sub Precinct C	36 Tir Conaill Avenue, 125 Murphys Road, 23 Murphys Park Drive, 125B Murphys Road Flat Bush

8517 Brownhill Road to Otahuhu Underground Electricity Transmission Cables

Designation Number	8517
Requiring Authority	Transpower New Zealand Ltd
Location	443 227 Brownhill Road, Whitford to 26-28 Kaitawa Street, Otara
Rollover Designation	Yes
Legacy Reference	Designation 301, Auckland Council District Plan (Manukau Section) 2002
Lapse Date	1 March 2040

Purpose

Electricity transmission - the construction, operation and maintenance of a double-circuit

underground 220kV cable as part of the upper North Island Grid Upgrade Project, to convey electricity between the Otahuhu Substation and the ~~substation site at~~ Brownhill Road Substation, and ancillary activities.

Explanatory Note

The nature of the work is described more particularly in Part VII (excluding section 12 in relation to suggested conditions), and also in Parts II and X of the Notices of Requirement Documentation (dated April 2007), and the Notice of Requirement Documentation to alter the designation dated 18 December 2024.

Conditions

Documents

1. The initial works to give effect to the designation of the Brownhill to Otahuhu underground cable shall be generally in accordance with ~~Maps 24-30 of Appendix V~~ Pages 1-7 of BHL-OTA cable designation area and route (see attachments).

Magnetic Fields (MF)

2. Any new works or equipment shall be designed and operated to limit the magnetic field exposures to the International Commission on Non-Ionising Radiation Protection, Guidelines for limiting exposure to time varying electric, magnetic, fields (1Hz- 100kHz) (Health Physic 99(6):818-836: 2010) (ICNIRP Guidelines). That is the public exposure reference level of 200 μ T for magnetic flux density when measured at 1 metre above ground level directly above any cable under normal operating conditions. (ie, when there are no faults in the transmission system).

3. In order to reduce long-term public exposure to MFs, no habitable buildings shall be constructed within the designated corridor for the underground cable.

Radio frequency

4. All works shall be designed to comply with NZS 6869:2004 Limits and Measurement Methods of

Electromagnetic Noise from High-Voltage a.c. Power Systems, 0.15 to 1000 MHz.

Earth potential rise / induced voltages

5. The works shall be designed and constructed to comply with regulations ~~33, 42, 58, 60, 69 and 87~~ and Part 2 General safety requirements, Requirements for electrical safety of the Electricity Regulations ~~1997 2010, as in force at the date of confirmation of the designation~~

6. Any works or equipment shall be designed and constructed so as not to cause existing assets of other utilities to be non-compliant with AS/NZS 4853: 2012 – Electrical Hazard on Metallic Pipelines.

Existing utilities

7. Transpower shall liaise with all relevant utility operators during the detailed design and subsequent construction processes prior to undertaking any work pursuant to this designation and shall ensure that:

a. it is aware of the location of all utility services existing at the time of construction in or adjacent to the designation; if necessary, exploratory excavation shall be undertaken;

b. to the greatest extent practicable, all utility services existing at ~~28 May 2007~~ Lodgement Day Month Year 18 December 2024 (being the date the Notice of Requirement to alter the designation was lodged) located in or adjacent to the designation are protected from any activity associated with the Upper North Island Grid Upgrade Project which may interfere with the proper functioning of the services;

c. if it is not practicable to avoid a reduction in the level of service in accordance with (b) above, or if services are otherwise damaged, all utility services existing at ~~28 May 2007~~ Lodgement Day Month Year 18 December 2024 located in or adjacent to the designation are repaired or relocated at Transpower's expense, to the reasonable satisfaction of the affected utility operator; and

d. ~~reasonable access to~~ existing utility services located in or adjacent to the designation are able to be accessed during construction, and
e. where directional drilling crosses any public stormwater network asset, CCTV of the asset must be submitted to the asset owner at the completion of the project.

8. Nothing in condition 7(c) requires Transpower to:

a. provide compensation to any affected utility operator for indirect costs, such as for delays and inconvenience caused; and

b. put the owner of the utility services in a better position than if the Upper North Island Grid Upgrade

Project had not been proposed or installed.

Archaeology: known sites R11/2333 and R11/2384

~~9. Before any construction works are carried out associated with the Upper North Island Upgrade Project, Transpower shall make any minor adjustments to the location of the cable trench within the corridor to ensure that the sites R11/2333 and R11/2384 are not damaged by construction of the cable trench.~~

9. Prior to construction works commencing, an HNZPT archaeological authority should be applied for to undertake works on East Tāmaki Road. The remainder of the works should take place under the Auckland Unitary Plan Accidental Discovery Rule (Chapter E11.6.1 and E12.6.1) Transpower's accidental discovery protocol.

Advice note:

This condition is subject to any conditions of any archaeological authority granted under the ~~Historic~~

~~Places Act 1993~~ Heritage New Zealand Pouhere Taonga Act 2014.

Construction Management Plan (CMP)

10. At least 30 working days prior to commencing any construction activity along the designated underground cable route, Transpower shall submit a Construction Management (CMP) to the Council for approval. The Council's ~~Consents~~ Resource Consents South Manager, shall respond within 20 working days indicating whether approval is given or Transpower's intended approach to:

- a. The proposed construction methodology;
- b. Storage and reuse and top soil, including stockpiling areas;
- c. On-site and off-site disposal of soil;
- d. Silt and dust control, during earthwork stages;
- e. Groundwater and stormwater management, treatment and disposal;
- f. Traffic/property access management;
- g. Contaminated land management procedures;
- h. Construction hours;
- i. Existing network utilities protocols and guidelines;
- j. Access and utilities management;
- k. Subject to other specific conditions, cultural protocols and archaeological requirements including any necessary management protocols to ensure the protection of the dry stone walls of Hampton Park/St John Church (AUP ID 1343) during construction associated with the new designation route along East Tamaki Road;
- l. Land stability management and water quality and sediment controls;
- m. Vegetation disturbance/removal and replacement;
- n. Management of construction activities;
- o. Contractor training, including health and safety;
- p. The intended construction programme, including staging if appropriate.
- q. Management of construction noise;
- r. Community information and liaison;
- s. Temporary activities and equipment storage in specified areas;
- t. Contractor car parking in specified areas;
- u. Security and lighting during construction; and
- v. Situations where the proposed cable depth could differ from the 1500 mm shown on ~~Map 6 or 7 of Appendix V (see attachments), Drawing TP203722 For 220kV 1C*2500sqmm Cable System Typical Trench Drawing Sheet 1 (see attachments)~~ including likely reasons for differing depth and means of resolving any issues arising from that depth.

11. In preparing the CMP in accordance with condition 10, the following minimum requirements shall be met:

- a. Quality soil shall be reused, where appropriate, and suitable stockpiling areas shall be identified;
- b. Spoil which is not reused, where appropriate, and suitable stockpiling areas shall be identified;
- c. Dust on-site shall be minimised to ensure that there is no dust nuisance off-site as a result of the works. Such minimisation could include spraying with water or covering of areas;
- d. Clean stormwater shall be directed away from bare or earthworked areas and sediment laden runoff shall be properly controlled and managed to minimise any discharge of sediments into watercourses;
- e. As far as practicable, disturbance to riparian areas and stream banks and beds shall be minimised during construction;
- f. Measures for testing and removing any contaminated land along the route shall be developed;
- g. Liaison with existing utility providers with underground services within the designated route shall be undertaken;
- h. Adequate measures shall be implemented so as to avoid land slope failure;
- i. When construction is taking place within the dripline of any tree over two metres in height to be retained on a public road or other public or private land, a qualified arborist shall be engaged to advise on the best method of root pruning and for continuing long-term avoidance of root interference with the cable;
- j. Site contractors shall have available at all working times, at an accessible place along the cable route, copies of all designation and consent conditions, the approved Construction Management Plan and the Draft Protocols entitled Transpower Grid Upgrade Project Protocol for Dealing with Kōiwi or Taonga Unearthed During Construction and the Discovery of Sites of Significance, Wāhi Tapu, Heritage Sites and Archaeological Sites (or updated document). Transpower shall ensure that the contractors understand the designation conditions and consent conditions;
- k. Transpower shall notify the Council in writing at least 10 working days before commencing works (including a separate notification for works commencing in Turanga Creek, ~~Mangemangeroa Stream~~ and Otara Creek), and shall notify the Councils that works have been completed within 10 working days following completion of the works;
- l. Parties adjacent to the route shall be notified prior to commencement of works and shall be regularly updated;
- m. Temporary activities, such as equipment storage shall be undertaken in suitably located areas (ie, not within 20 metres of a watercourse);
- n. Contractor car parking shall be suitably located, so as not to prevent property access; and
- o. Work sites shall be secure and illuminated to restrict access as appropriate.

12. In preparing the CMP in accordance with condition 10, ~~Housing New Zealand Corporation~~ Kāinga Ora shall be consulted.

Advice note:

Where the CMP requires Transpower to give notice to the Council, that notice can be given progressively, as stages of the work are complete.

Construction hours

13. Construction hours shall be as follows:

- a. Monday to Friday: 7am to 6pm;
- b. Saturday: 8am to 1pm; and
- c. Sundays and public holidays: No work. Except where work is necessary outside the specified days or hours for the following purposes:
 - i. Where work is required to be planned to be carried out at low-traffic times, for example, excavation across busy roads, or cable installation;
 - ii. Delivery of large equipment;
 - iii. Emergencies;
 - iv. Securing of the site or removing a traffic hazard;
 - v. Cable jointing in self- contained enclosures; or
 - vi. Where the distance between the work and the nearest residence is 100 metres or more and all other conditions are met.

Construction and Maintenance Noise

14. ~~All The noise from any~~ construction work ~~activity shall be designed, must be measured, assessed, and~~ managed ~~and conducted in accordance with the requirements of to ensure that construction and maintenance noise from the site does not exceed the limits in~~ NZS6803:1999 Acoustics–Construction Noise. Construction work is defined in New Zealand Standard NZS6803:1999 Acoustics – Construction noise.

15. ~~Prior to any significant construction work taking place, a noise management plan shall be prepared, with the assistance of a suitably qualified and experienced person, that sets out the management procedures in terms of section 8 and Annex E of NZS6803:1999, and the works shall be undertaken in accordance with that noise management plan (other than emergency works).~~

A Construction Noise and Vibration Management Plan (CNVMP) must be submitted to Auckland Council for certification prior to commencement of any construction works that cannot comply with the guideline upper limits of New Zealand Standard NZS6803:1999 Acoustics–Construction Noise. The objective of the CNVMP is to identify and require the adoption of the best practicable option to minimise construction noise and vibration effects as far as practical.

16. The ~~noise management plan~~ CNVMP required by condition 15 ~~shall must~~ be submitted to the Council's Consents Manager, Resource Consents South, for approval, at least certification a minimum of twenty (20) working days prior to commencement of the works ~~commencing. The Council's Consents Manager shall respond within 20 working days indicating whether approval is given or refused. Construction works must not commence until certification has been received in writing from the Council. Approval Certification must shall~~ not be unreasonably withheld.

Advice note:

The ~~noise management plan~~ CNVMP required by condition 15 can be incorporated into, and be part of the construction management plan required by condition 10.

Vibration

17. Vibration from all construction activities shall not exceed the limits of, and shall be measured and assessed in accordance with, German Standard DIN 4150-3 (1999-02) Structural Vibration – Effects of Vibration on Structures.

Traffic / roading

18. Transpower shall prepare a Traffic Management Plan (TMP) which is generally consistent with

~~NZTA's Code of Practice for Temporary Traffic Management (COPTTM).~~ the National Code of Practice for Utility Operators' Access to Transport Corridors under the Utilities Access Act 2010.

19. The TMP shall be submitted to the Council's ~~Consents~~ Manager, Resource Consents South for approval at least 20 working days prior to commencement of underground cable construction after consultation with:

- a. The Council;
- b. The following key stakeholders:
 - i. Emergency services (including police);
 - ii. Bus operators;
 - iii. Schools;
 - iv. ~~Housing New Zealand Corporation~~ Kāinga Ora;
- c. Any additional key stakeholders identified by the Council.

20. The council shall respond within 20 working days indicating whether approval is given or refused. Approval shall not be unreasonably withheld.

21. The TMP prepared by Transpower shall recognise that the paramount purpose of roads is the free passage of the public and its vehicles.

22. The TMP prepared by Transpower shall address and provide details of proposed works and/or mitigation measures relating to the following matters:

- a. The likely routes for heavy construction-related traffic, the assignment of which should minimise uncontrolled right turn movements and maximise the use of the arterial road network;
- b. Details of any necessary road closures, diversions, or deviations which are likely to be required during construction activities, including the likely date, time and duration of such actions. As far as practicable, any necessary temporary road closures should be effected during off-peak periods;
- c. Where diversions or deviations are required, information and recommendations shall be provided

by a suitably qualified and experienced traffic engineer of the traffic volumes and capacities of alternative routes, and the likely consequent effects in terms of safety and convenience. The traffic engineer shall ensure that recommended alternative routes are reasonably convenient and capable of safely accommodating diverted or deviated traffic. Transpower shall act on the recommendations of the traffic engineer in relation to alternative routes. Where traffic modelling related to specific intersections is required, the results of the modelling shall be included (see conditions 23 to 25);

- d. Details of the signage intended to advise motorists, residents, stakeholders, and other road users of any road closures, diversions and delays, including examples of signage for diversion routes. Such signage shall be sufficiently clear to enable easy understanding by the general public, and

installed at appropriate locations at least seven days in advance of such road closures, diversions and

delays. Such signage shall include the use of trailer-mounted electronic signs near the most affected roads;

e. Details of methods of proposed information dissemination regarding construction activities and associated traffic effects. These details shall include information regarding likely timing and duration of works, alternative routes, access to properties, and any alterations to public transport services. Methods of information dissemination shall include, but not be limited to, public notices in newspapers, radio announcements, signage, information packages, and direct contact with affected properties along those routes;

f. Inclusion of a communications plan setting out the method of consultation and liaison with key stakeholders and affected parties regarding likely timing and duration of works, alternative routes, access to properties and any alterations to public transport services;

g. Details of prior consultation or community liaison undertaken with affected residents, key stakeholders, schools, public transport providers, emergency services or representative groups regarding proposed road closures, diversions, and delays, on street parking changes and any measures agreed with such groups to address any adverse effects or inconvenience that may arise;

h. Any road diversions, closures, or single lane closures outside Mission Heights Primary School and Mission Heights Junior College must be undertaken, as far as practical, during school holidays or outside school hours.

~~h.i.~~ Details of any measures for the purposes of mitigating adverse traffic effects of construction traffic, including safety matters, relating to cyclists, pedestrians, mobility impaired persons, and school children;

~~h.j.~~ Where the cable is proposed to be installed across major intersections and/or arterial roads carrying higher traffic volumes (such as Ti Rakau Drive, Te Irirangi Drive, Chapel Road, Springs Road, East Tamaki Road), three months prior to the commencement of construction an assessment shall be carried out by a suitably qualified and experienced traffic engineer of:

- i. The traffic volumes using such intersections or roads;
- ii. The likely levels of delays and disruptions which may be experienced as a result of cable construction; and
- iii. Identification of locations where such installation works must be carried out in

the most

timely manner practicable (including where reasonably practicable, the use of alternative methods of installation other than trenching), so as to minimise delays or inconvenience to road users;

k. How heavy vehicles must avoid travelling past Mission Heights Primary School and Mission Heights Junior College during peak before and after school travel times, during term time (8.00am to 8.45am and 3.00pm to 3.30pm). Heavy vehicles are classified by size, being any construction vehicle that is larger than the average ute or van and has the potential to reduce visibility on the road.

l. Details of how truck drivers will be briefed on the importance of slowing down and adhering to established speed limits when driving past schools, and to look out for school children and reversing vehicles at all times.

~~l.m.~~ Following consultation with public transport providers, details of proposed alternative

temporary changes to public transport services during the construction period including but not limited to any route diversions, timetable adjustments, temporary bus stops, and methods of communicating such matters to public transport users.

23. Following consultation with the Boards and/or principals of Mission Heights Primary School, Mission Heights Junior College, Sir Edmund Hillary College and Sancta Maria College (and any schools subsequently established with accesses and/or egresses adjacent to the underground cable route), Transpower shall ensure, as far as practicable, that works avoid school terms so as to minimise disruption to normal school activities. Details of relevant periods shall be included in the TMP.

24. Following consultation with ~~the New Zealand Fire Service~~ Fire and Emergency New Zealand, details shall be provided in the TMP of proposed alternative access to and egress from the fire station located at 341 East Tamaki Road.

25. Transpower shall carry out traffic modelling at the intersections of Johnstones Road/Springs Road/East Tamaki Road and Chapel Road/Accent Drive/Stancombe Road to assess the impact of the construction works on intersection capacity prior to completing the Construction Management Plan and the Traffic Management Plan as required by conditions 10 and 20 ~~18~~, and incorporate any necessary specific provisions in the CMP.

Advice note:

The traffic management plan required by condition 18 can be incorporated into, and be part of, the construction management plan required by condition 10.

Continuation of access

26. Transpower shall at all times ensure that access to any property temporarily severed by construction is maintained at a level that will enable, as far as practicable, normal operations on the property to continue.

Parking

27. Following consultation with residents, businesses and other directly affected persons, Transpower shall ensure that adequate temporary alternative car parking is provided for residents, businesses and other directly affected persons along or adjacent to the cable route, in the event that construction activity prevents or hinders usual parking. Such arrangements are to be made and advised to affected parties at least five working days prior to the commencement of the work that causes the effect.

Remediation of property, roads and footpaths

28. Other than as provided in condition 29, Transpower shall:

- a. within 10 working days of completion of construction on any land, reinstate any private or public land and property (excluding works in road reserves) as far as practicable to its pre-existing state. Such remediation shall include fences, gardens (excluding trees and grass) and other surface equipment or materials; and
- b. as soon as practicable after the completion of construction, re-grass areas that were previously grassed.

29. As soon as practicable after the completion of construction, Transpower shall repair any damage

to public carriageways, ~~and~~ footpaths (and associated road components) and public transport corridors resulting from the impacts of construction. Such repair may involve

short-term maintenance to allow for settling and consolidation of carriageways prior to final repair.

Cultural/Spiritual

30. If any urupā, traditional sites, taonga (significant artefacts), or kōiwi (human remains) are exposed during site works, the following procedures shall apply:

- a. Works in the immediate vicinity of the site that has been exposed shall cease;
- b. The site supervisor shall immediately secure the area in a way that ensures that any remains or artefacts are untouched;
- c. The site supervisor shall notify representatives of relevant tāngata whenua, ~~the New Zealand Historic Places Trust~~ Heritage New Zealand, the Auckland Council and, in the case of human remains, the New Zealand Police; and
- d. The notification in (c) above shall allow such persons being given a reasonable time to record and

recover archaeological features discovered before work may recommence on the exposed site.

Post-construction

31. Transpower will, as soon as practicable following completion of the cable works:

- a. Review the width of the area designated for the project; and
- b. Identify any areas of designated land that are no longer necessary for the on-going operation, maintenance, renewal and protection of the underground cables and ancillary activities; and
- c. Remove the designation over any surplus areas identified in (b) above in accordance with section 182 of the Act and provide a plan of the final designated areas to the Council for inclusion in the Auckland Unitary Plan.

Future roading

~~31.32.~~ Cable installed in the vicinity of the possible future road connections between:

- ~~a. The Redoubt Road extension between Regis Lane Kitenga Road and Ormiston Road (as shown on maps 49-50, Manukau City Council Operation District Plan 2002 (see attachments); and~~
- ~~b. The possible future road connection between Scenic Drive Redoubt Road and Brownhill Road; (as shown on Map 31 of Appendix V (see attachments);~~ shall be buried to a depth that does not prevent construction of those roads due to the presence of the cables, ~~in the locations shown on those plans,~~ in the future.

Auckland Transport

33. The Requiring Authority (Transpower) shall not require Auckland Transport to seek written consent under Section 176(1)(b) of the RMA for the following activities associated with the routine operation, maintenance, replacement and urgent repair of its roads and Bus Rapid Transit:

- a. Road marking; and
- b. Road resurfacing and repairs, and replacement kerb and channel, with excavations less than 500mm in depth; and
- c. Installation or reinstallation of signs and support posts with excavations less than 500mm in depth.

Advice notes:

1. Any new works or equipment means those works which were not existing prior to the notification of the Auckland Unitary Plan.

2. Where the Transpower BHL-OTA designation and the Auckland Transport Bus Rapid Transit – Botany to Rongomai Park designation overlap at the intersection of Ti Irirangi Drive and Accent Drive, during the construction of the earlier project at this location, Transpower and Auckland Transport will endeavour to align timing of construction activities where practicable to minimise the disturbance of the earlier project's operation when construction for the later project occurs.

Attachments

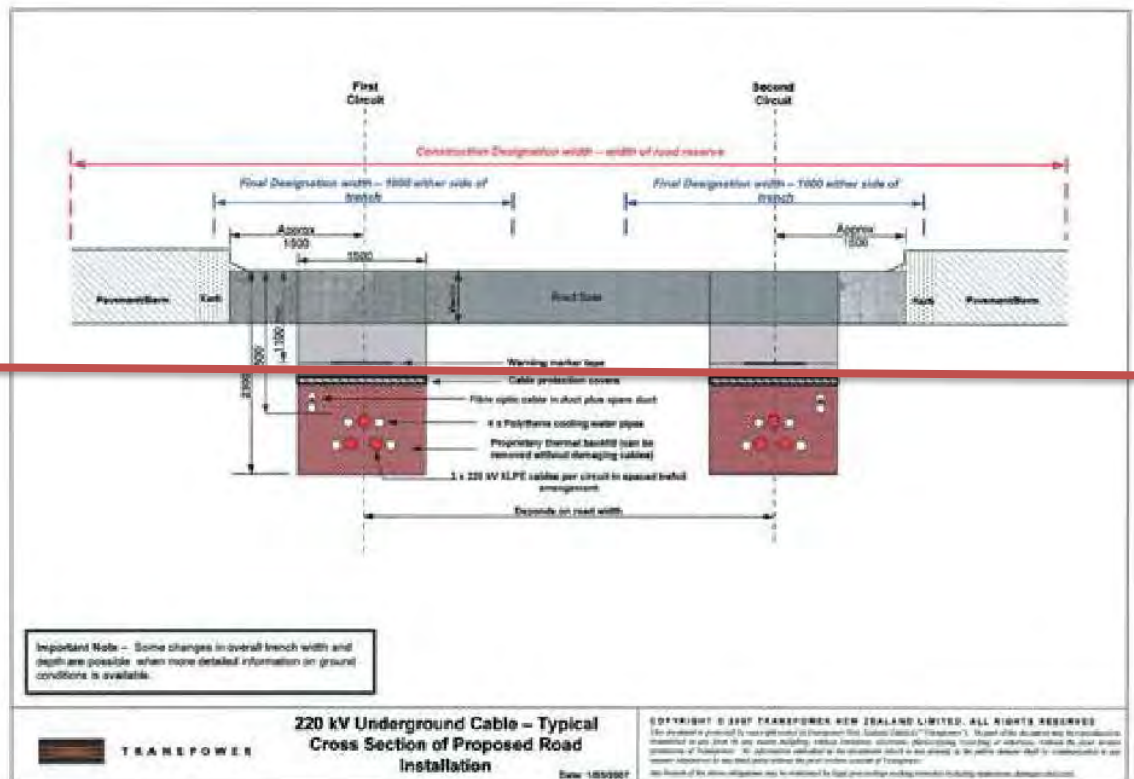
Maps from Appendix V of the Board of Inquiry

INDEX OF MAPS AND PLANS REFERRED TO IN PROPOSED DESIGNATION CONDITIONS

SET 4

MAP	PLAN DESCRIPTION	PAGE
UNDERGROUND CABLE ROUTE - CONSTRUCTION MANAGEMENT PLAN CONDITIONS		
Map 6	220kV Underground Cable - Typical Cross Section of Proposed Road Installation	6
Map 7	220kV Underground Cable - Typical Cross Section of Open Ground Installation	7

MAP 6



The diagram illustrates a 20m wide corridor for cable installation, divided into two circuit sections. A red line at the top indicates the corridor width, with a note: "Corridor width - up to 20 m width depending on terrain and access requirements".

Key components and dimensions shown:

- Dimensions:**
 - Overall corridor width: 20.00 m
 - Section width: 10.00 m
 - Section height: 1.500 m
- Labels and Components:**
 - First Circuit** and **Second Circuit** (indicated by dashed vertical lines)
 - Related to original structure** (pointing to the top layer)
 - Remastered sub soil or if not available, class 3 crushed rock** (pointing to the middle layer)
 - Working marker tape** (pointing to a dashed line)
 - Cable protection covers** (pointing to a dashed line)
 - More optic cable in duct (plus spare duct)** (pointing to a dashed line)
 - 4 x Polythene cooling water pipes** (pointing to red circles)
 - Proprietary thermal backfill (can be removed without damaging cables)** (pointing to a dashed line)
 - 3 x 120 kV XLPE cables per circuit in spaced braid arrangement** (pointing to red circles)
 - Typical 8 m** (indicated by a horizontal dimension line at the bottom)

**220 kV Underground Cable – Typical
Cross Section of Open Ground
Installation**

[illegible]

INDEX OF MAPS AND PLANS REFERRED TO IN PROPOSED DESIGNATION CONDITIONS

MAP	PLAN DESCRIPTION	PAGE
BROWNHILL TO OTAHUHU UNDERGROUND CABLE ROUTE CONDITIONS		
Map 24	Brownhill to Otahuhu Parcel Ownership Index Map, 4 June 2008	24
Map 25	Brownhill to Otahuhu Parcel Ownership Map 1 of 6, 4 June 2008	25
Map 26	Brownhill to Otahuhu Parcel Ownership Map 2 of 6, 4 June 2008	26
Map 27	Brownhill to Otahuhu Parcel Ownership Map 3 of 6, 4 June 2008	27
Map 28	Brownhill to Otahuhu Parcel Ownership Map 4 of 6, 4 June 2008	28
Map 29	Brownhill to Otahuhu Parcel Ownership Map 5 of 6, 4 June 2008	29
Map 30	Brownhill to Otahuhu Parcel Ownership Map 6 of 6, 4 June 2008	30
Map 31	Kent Subdivision, Drainage & Water Supply Plan - 2, Manukau City Council, issued 07/08/06	31

~~Maps 49-50, Manukau City Council Operative District Plan 2002~~



MAP 24

24



SE 490



25







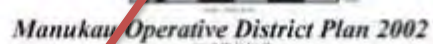
MAP 28



28







University of Birmingham
BIRMINGHAM
UK

Amended by Update 11

ID No.	Also on Map	Description of Destination	Linking Time	Requesting Authority
25		Food processing (also Chapter 2 in systems of 20th Planning Board)	Water Supply Division	Wardak City Council
26		Intermediate Pipelines (M. Water Supply Pipelines - Pressure and associated structures)	Water-Quest, Space 2	Vologorsk (Sovetsk 2)
27	25, 26, 28, 42, 43, 50, 51, 52	Gas Transmission Pipelines	Water	Water Gas (M)
28		Water Road Secondary for Fuel Lines (to any Gas Distribution Centre)	Fuel Gas-Reserve (M)	Mineral (Sovetsk)
29	27, 38, 48, 52, 58	Reservoir Substation by Fuel/Gas Substation (underground Electricity Cable)	General	Transport
30	25, 38, 52	Reservoir Substation by Fuel/Gas Substation (underground Electricity Cable)	General	Transport

Area on Map	Street Name	Description of Affected Properties	Depth of Land Required for Road Widening Purposes
16-10-00	Wichita Road	West side - Lot 1 (DPS0077) to Lot 4 (DPS0080) inclusive East side - Lot 1 (DPS0080) to Lot 2 (DPS0076) inclusive	3 feet

CD No.	ASD ID Map	Description of Affected Properties	Underlying Zone
40, 41, 42, 43, 44, 45		40 Properties classified as Stormwater Management Area (excluded from all zoning map changes)	State of Public Use





Manukau Operative District Plan 2002



Manukau Operative District Plan 2002



DOCUMENTATION FOR DISTRICT PLAN MAP 90

Amended by Update 11

Designations

ID No.	Also on Map	Description of Designation	Underlying Zone	Requiring Activity
41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52		Armed Activities Protection Reserves - Properties shown on the Planning Map are subject to controls outlined in Designation 20. Refer to Appendix 8 of the Planning Maps and Schedule 1A.	Residential	Armed Activities (2)
39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52		Gas Transmission Pipelines - Network - East Taranaki Gas Pipeline	Residential	Gas (2)
53		Brownfield Substation	Industrial (Rural 2)	Transportation
26, 27, 49		Brownfield Substation to Electricity Substation - Background Electricity Cables	Residential	Transportation

Proposed Road Widening

Also on Map	Road Name	Description of Affected Properties	Depth of Land Required for Road Widening Purposes
43	Sturges Road	North side - Lot 1 DP113128 to Lot 5 DP143233 inclusive	4.6m
43, 44	Murphy Road	West side - Lot 2 DP 122271 to Lot 1 DP113348 inclusive East side - Lot 2 DP147943 to Lot 2 DP142115 inclusive	3.6m

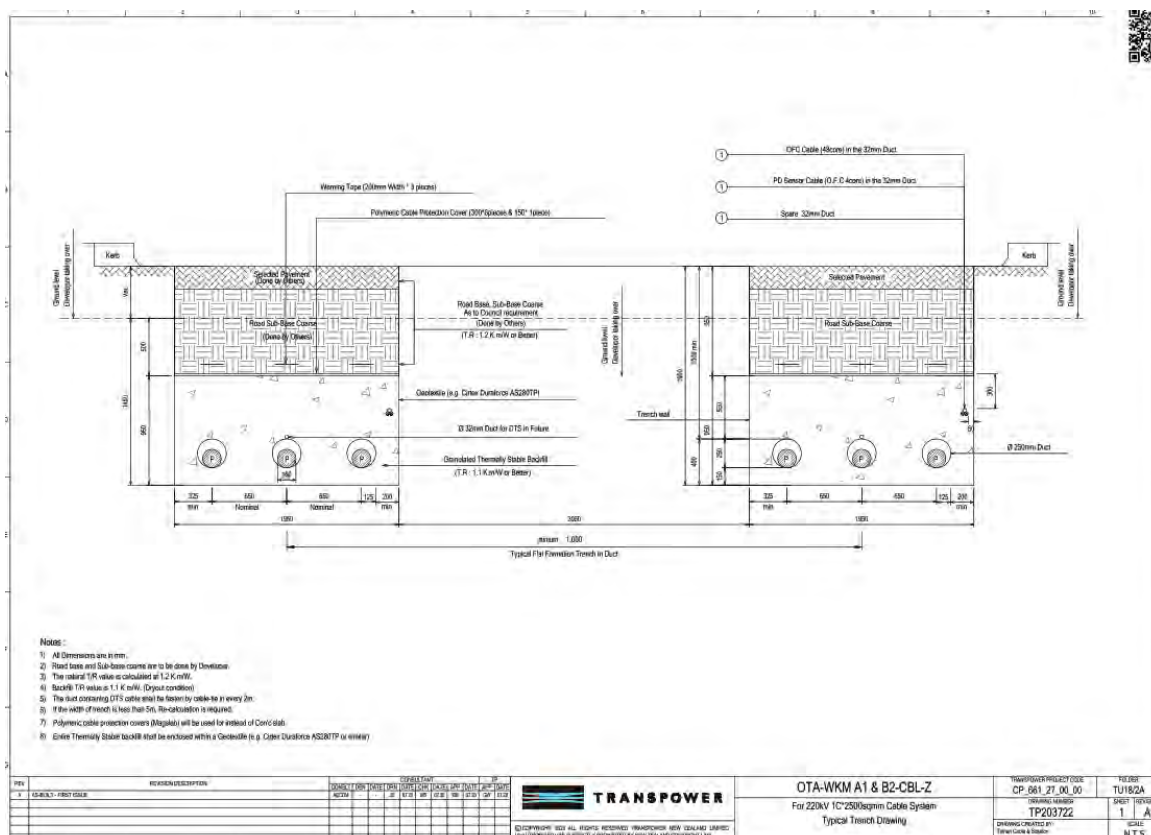
Stormwater Management Areas

ID No.	Also on Map	Description of Affected Properties	Underlying Zone
10, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51		All Properties identified as Stormwater Management Areas - (indicated Blue on relevant planning maps)	Refer to Rule 9.3.2



INDEX OF PLANS REFERRED TO IN DESIGNATION CONDITIONS

<u>PLAN</u>	<u>PLAN DESCRIPTION</u>	<u>SHEET</u>
<u>TP203722</u>	<u>For 220kV 1C*2500sqmm Cable System Typical Trench Drawing</u>	<u>1</u>



INDEX OF MAPS REFERRED TO IN DESIGNATION CONDITIONS

MAP DESCRIPTION	SHEET
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<u>BHL-OTA CABLE DESIGNATION AREA AND ROUTE</u>	<u>PAGE 1 OF 7</u>
<u>BHL-OTA CABLE DESIGNATION AREA AND ROUTE</u>	<u>PAGE 2 OF 7</u>
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Legend

- BHL-OTA Cable Designation Area and Route
- Parcel boundary

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Projection: NZTM 2000 Scale: 1:5,000

BHL-OTA Cable Designation Area and Route

0 100 200 300 Meters



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Legend

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BHL-OTA Cable Designation Area and Route

0 100 200 300 Meters

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BHL-OTA Cable Designation Area and Route

0 100 200 300 Meters

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BHL-OTA Cable Designation Area and Route

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BHL-OTA Cable Designation Area and Route

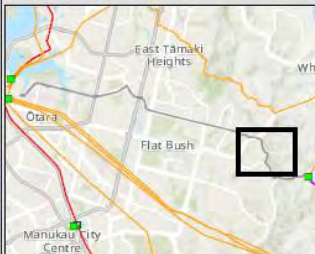
0 100 200 300 Meters

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BHL-OTA Cable Designation Area and Route

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Schedule of Legal Descriptions

Parcel ID/ Appellation	
Lot 38 DP 122457	5214767
Lot 39 DP 122457	5258386
5213395	Lot 1 DP 205294
Lot 44 DP 122457	5226343
Lot 45 DP 122457	Lot 26 DP 615
5220406	Lot 28 DP 317068
5229707	Sec 3 SO 70224
5234114	5212610
5234115	5218779
5242071	5263414
5245483	6755102
5247685	6868736
5253250	6868737
5211477	Sec 2 SO 70224
5253250	5263413
5243048	6576298
5209287	Lot 2 DP 348822
5217576	Lot 5 DP 348822
5235744	6755102
5245975	5247056
5259209	5237233
Lot 185 DP 50993	5218750
Allot 355 Parish of Pakuranga	Lot 1 DP 370733
5099005	5263064
5267324	5208695
Lot 279 DP 50344	5225858
5206109	5244805
5215068	Sec 1 SO 68877
5248339	Lot 1 DP 168092
5228620	5208692
5250436	5208693
5237621	5216198
5256686	5257455
5208934	5257462

5245707	5259600
5210416	7060314
Lot 500 DP 436444	Lot 2 DP 182255
Reclaimed Crown Foreshore Survey Office Plan 47238	Lot 3 DP 348822

<u>Parcel ID</u>	<u>Appellation</u>
<u>5074724</u>	<u>Lot 38 DP 122457</u>
<u>4817570</u>	<u>Lot 39 DP 122457</u>
<u>5213395</u>	<u>Road</u>
<u>5168529</u>	<u>Lot 44 DP 122457</u>
<u>4701869</u>	<u>Lot 45 DP 122457</u>
<u>5220406</u>	<u>Road</u>
<u>5245483</u>	<u>Road</u>
<u>5229707</u>	<u>Road</u>
<u>5242071</u>	<u>Road</u>
<u>5234115</u>	<u>Road</u>
<u>5247685</u>	<u>Road</u>
<u>5234114</u>	<u>Road</u>
<u>5253250</u>	<u>Road</u>
<u>5211477</u>	<u>Road</u>
<u>5243048</u>	<u>Road</u>
<u>5235744</u>	<u>Road</u>
<u>5245975</u>	<u>Road</u>
<u>5209287</u>	<u>Road</u>
<u>5259209</u>	<u>Road</u>
<u>5217576</u>	<u>Road</u>
<u>4755221</u>	<u>Allot 355 PSH OF Manurewa</u>
<u>8028879</u>	<u>Section 2 SO 541424</u>
<u>5099005</u>	<u>Reclaimed Crown Foreshore Survey Office Plan 47238</u>
<u>5267324</u>	<u>Hydro</u>
<u>4808525</u>	<u>Lot 279 DP 50344</u>
<u>5214856</u>	<u>Road</u>
<u>5247445</u>	<u>Road</u>
<u>5237621</u>	<u>Road</u>
<u>5247453</u>	<u>Road</u>
<u>5208934</u>	<u>Road</u>
<u>5247449</u>	<u>Road</u>
<u>5210416</u>	<u>Road</u>
<u>5245707</u>	<u>Road</u>
<u>5206109</u>	<u>Road</u>
<u>5256686</u>	<u>Road</u>
<u>5215068</u>	<u>Road</u>
<u>5248339</u>	<u>Road</u>
<u>5213926</u>	<u>Road</u>
<u>5250436</u>	<u>Road</u>
<u>5228620</u>	<u>Road</u>
<u>5258386</u>	<u>Road</u>
<u>5214767</u>	<u>Road</u>

<u>5214767</u>	<u>Road</u>
<u>7458019</u>	<u>Road</u>
<u>5214015</u>	<u>Road</u>
<u>5255321</u>	<u>Road</u>
<u>5260617</u>	<u>Road</u>
<u>5260621</u>	<u>Road</u>
<u>5260624</u>	<u>Road</u>
<u>5252888</u>	<u>Road</u>
<u>5260631</u>	<u>Road</u>
<u>5260627</u>	<u>Road</u>
<u>5260632</u>	<u>Road</u>
<u>5263411</u>	<u>Road</u>
<u>6746089</u>	<u>Lot 1018 DP 340679</u>
<u>6755102</u>	<u>Lot 1019 DP 348822</u>
<u>5263414</u>	<u>Road</u>
<u>5218750</u>	<u>Road</u>
<u>5247056</u>	<u>Road</u>
<u>5218779</u>	<u>Road</u>
<u>5263064</u>	<u>Road</u>
<u>5225858</u>	<u>Road</u>
<u>5244805</u>	<u>Road</u>
<u>5208695</u>	<u>Road</u>
<u>7103669</u>	<u>Road</u>
<u>7103670</u>	<u>Road</u>
<u>4843013</u>	<u>Section 1 SO 68877</u>
<u>4860015</u>	<u>Lot 1 DP 168092</u>
<u>5216198</u>	<u>Road</u>
<u>7060314</u>	<u>Part Allot 205 PSH OF Pakuranga</u>
<u>5257455</u>	<u>Road</u>
<u>5208692</u>	<u>Road</u>
<u>5257462</u>	<u>Road</u>
<u>5208693</u>	<u>Road</u>
<u>7781813</u>	<u>Lot 502 DP 507828</u>
<u>7743019</u>	<u>Lot 500 DP 500844</u>
<u>5263387</u>	<u>Road</u>
<u>6841781</u>	<u>Lot 74 DP 353601</u>
<u>7656679</u>	<u>Lot 100 DP 486594</u>
<u>7656682</u>	<u>Lot 301 DP 486594</u>
<u>7656683</u>	<u>Lot 302 DP 486594</u>
<u>7656677</u>	<u>Lot 23 DP 486594</u>

Attachments D

**Transpower New Zealand Limited Schedule and
Designation 8517 Brownhill Road to Otahuhu
Underground Electricity Transmission Cables
conditions (clean)**

Designation Schedule - Transpower New Zealand Ltd

Number	Purpose	Location
8500	Electricity transmission - electricity transmission tower site and associated overhead transmission lines...	161 Ash Street, Avondale
8501	Electricity transmission - Penrose electricity substation	19 Gavin Street, Penrose
8502	Electricity transmission - overhead electricity transmission lines ...	Gavin Street (opposite No. 19), Ellerslie to Tamaki River (Panmure Bridge), Panmure
8503	Electricity transmission - Mount Roskill electricity substation	11-39 White Swan Road, Mount Roskill
8504	Electricity transmission - overhead electricity transmission lines ...	37 Boundary Road, Avondale
8505	Electricity transmission - tower site and associated overhead lines ...	39 Haycock Avenue, Mount Roskill
8506	Electricity transmission - tower site and associated overhead lines ...	135A, 137 and 137A Barrack Road, Mount Wellington
8507	Electricity transmission - the construction, operation and maintenance of underground transmission lines ...	19 Gavin Street to 109 Golfland Drive, Pakuranga
8508	Electricity transmission - tower site and associated overhead transmission lines ...	716 Richardson Road, Mount Roskill
8509	Electricity transmission - tower site (Tower 9) and associated overhead transmission lines ...	Luke Street (adjoins State Highway 1), Otahuhu
8510	Electricity transmission - Glenbrook electricity substation	Whitham Road, Glenbrook
8511	Electricity transmission - Bombay electricity substation	153 Barber Road, Bombay
8512	Electricity transmission - the construction, operation and maintenance of that part of a 400kV capable transmission line ...	231 Whitford Park Road, Whitford to the vicinity of Paparimu Road (Waikato District Council Boundary), Pokeno
8513	Electricity transmission - the operation, maintenance and upgrade of the existing Otahuhu Substation, the construction of a new 220kV substation, installation of 220kV underground cable circuits ...	1 Gridco Road and 2 Helabys Road, Otara
8514	Electricity transmission - the ongoing use, maintenance and operation of the Pakuranga Electricity Substation, the development of the substation site ...	109 Golfland Drive, Pakuranga
8515	Electricity Transmission - the construction, operation and maintenance of a transition station to connect the underground cable and overhead lines ...	16 Umbria Lane (near Brownhill Road), Whitford
8516	Electricity Transmission - the construction, operation and maintenance of a double circuit underground 220kV cable ...	143 Brownhill Road, Whitford to 109 Golfland Drive, Howick
8517	Electricity transmission - the construction, operation and maintenance of a double-circuit underground 220kV cable ...	227 Brownhill Road, Whitford to 26-28 Kaitawa Street, Otara
8518	Electricity transmission - Albany electricity substation	29 Bass Road, Albany
8519	Electricity transmission - the installation, maintenance, repair, replacement, inspection and operation of two 220kV underground electricity transmission lines ...	410 Albany Highway to State Highway 1 (Constellation Drive), Rosedale
8520	Electricity transmission - Takanini electricity substation	65 Airfield Road, Takanini

8521	Electricity transmission - the construction, operation, maintenance, replacement, renewal and upgrading of a 220kV switchyard, transmission lines, and ancillary facilities	261 Quarry Road, Drury
8522	Electricity transmission - Wellsford electricity substation	69 School Road, Wellsford
8523	Electricity transmission - Silverdale electricity substation	83-91 Foundry Road, Silverdale
8524	Electricity transmission - Huapai electricity substation	108 Matua Road, Huapai
8525	Electricity transmission - Henderson electricity substation	1-12 and 41-47 Lincoln Park Avenue, Massey
8526	Electricity transmission - Hepburn Road electricity substation	167-217 Hepburn Road, Glendene
8527	Electricity transmission - Rua o te Whenua telecommunications facility	600 Scenic Drive, Waiatarua
8528	Electricity Transmission – the Massey North Underground Cable Project, comprising a 110kV underground transmission line for the conveyance of electricity and ancillary structures associated with the works to be located between existing Towers 6 and 12 of the Albany – Henderson A 110kV overhead transmission line. Transferred to Vector Limited March 2024	11 Westgate Drive, Massey to 20 Northside Drive, Whenuapai
8529	Electricity transmission - Mangere electricity substation	11, 14 and 16 Driver Road and 307 Massey Road, Mangere
8530	Electricity transmission - Hobson Street electricity substation	13-21 Hobson Street, Auckland City
8531	Electricity transmission - Wairau Road electricity substation	4A Wairau Road, Takapuna
8532	Electricity Transmission - the operation, maintenance and upgrading of underground transmission lines comprising of two 110kV cable circuits and termination structures to convey electricity between Otahuhu and Penrose	Highbrook Business Park, Highbrook
8533	Electricity transmission - Wiri electricity substation	656 Great South Road, Manukau
8534	Electricity transmission – Flat Bush Sub Precinct C	36 Tir Conaill Avenue, 125 Murphys Road, 23 Murphys Park Drive, 125B Murphys Road Flat Bush

8517 Brownhill Road to Otahuhu Underground Electricity Transmission Cables

Designation Number	8517
Requiring Authority	Transpower New Zealand Ltd
Location	227 Brownhill Road, Whitford to 26-28 Kaitawa Street, Otara
Rollover Designation	Yes
Legacy Reference	Designation 301, Auckland Council District Plan (Manukau Section) 2002
Lapse Date	1 March 2040

Purpose

Electricity transmission - the construction, operation and maintenance of a double-circuit underground 220kV cable as part of the upper North Island Grid Upgrade Project, to convey electricity between the Otahuhu Substation and the Brownhill Road Substation, and ancillary activities.

Explanatory Note

The nature of the work is described more particularly in Part VII (excluding section 12 in relation to suggested conditions), and also in Parts II and X of the Notices of Requirement Documentation (dated April 2007), and the Notice of Requirement Documentation to alter the designation dated 18 December 2024.

Conditions

Documents

1. The initial works to give effect to the designation of the Brownhill to Otahuhu underground cables shall be generally in accordance with Pages 1-7 of BHL-OTA cable designation area and route (see attachments).

Magnetic Fields (MF)

2. Any new works or equipment shall be designed and operated to limit the magnetic field exposures to the International Commission on Non-Ionising Radiation Protection, Guidelines for limiting exposure to time varying electric, magnetic, fields (1Hz- 100kHz) (Health Physic 99(6):818-836: 2010)(ICNIRP Guidelines). That is the public exposure reference level of 200 μ T for magnetic flux density when measured at 1 metre above ground level directly above any cable under normal operating conditions. (ie, when there are no faults in the transmission system).
3. In order to reduce long-term public exposure to MFs, no habitable buildings shall be constructed within the designated corridor for the underground cable.

Radio frequency

4. All works shall be designed to comply with NZS 6869:2004 Limits and Measurement Methods of Electromagnetic Noise from High-Voltage a.c. Power Systems, 0.15 to 1000 MHz.

Earth potential rise / induced voltages

5. The works shall be designed and constructed to comply with regulations 33, 42 and Part 2 General safety requirements, Requirements for electrical safety of the Electricity Regulations 2010.

6. Any works or equipment shall be designed and constructed so as not to cause existing assets of other utilities to be non-compliant with AS/NZS 4853: 2012 – Electrical Hazard on Metallic Pipelines.

Existing utilities

7. Transpower shall liaise with all relevant utility operators during the detailed design and subsequent construction processes prior to undertaking any work pursuant to this designation and shall ensure that:

- a. it is aware of the location of all utility services existing at the time of construction in or adjacent to the designation; if necessary, exploratory excavation shall be undertaken;
- b. to the greatest extent practicable, all utility services existing at 18 December 2024 (being the date the Notice of Requirement to alter the designation was lodged) located in or adjacent to the designation are protected from any activity associated with the Upper North Island Grid Upgrade Project which may interfere with the proper functioning of the services;
- c. if it is not practicable to avoid a reduction in the level of service in accordance with (b) above, or if services are otherwise damaged, all utility services existing at 18 December 2024 located in or adjacent to the designation are repaired or relocated at Transpower's expense, to the reasonable satisfaction of the affected utility operator; and
- d. existing utility services located in or adjacent to the designation are able to be accessed during construction, and
- e. where directional drilling crosses any public stormwater network asset, CCTV of the asset must be submitted to the asset owner at the completion of the project.

8. Nothing in condition 7(c) requires Transpower to:

- a. provide compensation to any affected utility operator for indirect costs, such as for delays and inconvenience caused; and
- b. put the owner of the utility services in a better position than if the Upper North Island Grid Upgrade Project had not been proposed or installed.

Archaeology: known sites R11/2333 and R11/2384

9. Prior to construction works commencing, an HNZPT archaeological authority should be applied for to undertake works on East Tāmaki Road. The remainder of the works should take place under the Auckland Unitary Plan Accidental Discovery Rule (Chapter E11.6.1 and E12.6.1).

Advice note:

This condition is subject to any conditions of any archaeological authority granted under the Heritage New Zealand Pouhere Taonga Act 2014.

Construction Management Plan (CMP)

10. At least 30 working days prior to commencing any construction activity along the designated underground cable route, Transpower shall submit a Construction Management (CMP) to the Council for approval. The Council's Manager, Resource Consents South shall respond within 20 working days indicating whether approval is given or Transpower's intended approach to:

- a. The proposed construction methodology;
- b. Storage and reuse and top soil, including stockpiling areas;
- c. On-site and off-site disposal of soil;
- d. Silt and dust control, during earthwork stages;
- e. Groundwater and stormwater management, treatment and disposal;
- f. Traffic/property access management;

- g. Contaminated land management procedures;
- h. Construction hours;
- i. Existing network utilities protocols and guidelines;
- j. Access and utilities management;
- k. Subject to other specific conditions, cultural protocols and archaeological requirements including any necessary management protocols to ensure the protection of the dry stone walls of Hampton Park/St John Church (AUP ID 1343) during construction associated with the new designation route along East Tamaki Road;
- l. Land stability management and water quality and sediment controls;
- m. Vegetation disturbance/removal and replacement;
- n. Management of construction activities;
- o. Contractor training, including health and safety;
- p. The intended construction programme, including staging if appropriate;
- q. Management of construction noise;
- r. Community information and liaison;
- s. Temporary activities and equipment storage in specified areas;
- t. Contractor car parking in specified areas;
- u. Security and lighting during construction; and
- v. Situations where the proposed cable depth could differ from the 1500 mm shown on Drawing TP203722 For 220kV 1C*2500sqmm Cable System Typical Trench Drawing Sheet 1 (see attachments) including likely reasons for differing depth and means of resolving any issues arising from that depth.

11. In preparing the CMP in accordance with condition 10, the following minimum requirements shall be met:

- a. Quality soil shall be reused, where appropriate, and suitable stockpiling areas shall be identified;
- b. Spoil which is not reused, where appropriate, and suitable stockpiling areas shall be identified;
- c. Dust on-site shall be minimised to ensure that there is no dust nuisance off-site as a result of the works. Such minimisation could include spraying with water or covering of areas;
- d. Clean stormwater shall be directed away from bare or earthworked areas and sediment laden runoff shall be properly controlled and managed to minimise any discharge of sediments into watercourses;
- e. As far as practicable, disturbance to riparian areas and stream banks and beds shall be minimised during construction;
- f. Measures for testing and removing any contaminated land along the route shall be developed;
- g. Liaison with existing utility providers with underground services within the designated route shall be undertaken;
- h. Adequate measures shall be implemented so as to avoid land slope failure;
- i. When construction is taking place within the dripline of any tree over two metres in height to be retained on a public road or other public or private land, a qualified arborist shall be engaged to advise on the best method of root pruning and for continuing long-term avoidance of root interference with the cable;
- j. Site contractors shall have available at all working times, at an accessible place along the cable route, copies of all designation and consent conditions, the approved Construction Management Plan and the Draft Protocols entitled Transpower Grid Upgrade Project Protocol for Dealing with Kōiwi or Taonga Unearthed During Construction and the Discovery of Sites of Significance, Wāhi Tapu, Heritage Sites and Archaeological Sites (or updated document). Transpower shall ensure that the contractors understand the designation conditions and consent conditions;
- k. Transpower shall notify the Council in writing at least 10 working days before commencing works (including a separate notification for works commencing in Turanga

Creek and Otara Creek), and shall notify the Councils that works have been completed within 10 working days following completion of the works;

l. Parties adjacent to the route shall be notified prior to commencement of works and shall be regularly updated;

m. Temporary activities, such as equipment storage shall be undertaken in suitably located areas (ie, not within 20 metres of a watercourse);

n. Contractor car parking shall be suitably located, so as not to prevent property access; and

o. Work sites shall be secure and illuminated to restrict access as appropriate.

12. In preparing the CMP in accordance with condition 10, Kāinga Ora shall be consulted.

Advice note:

Where the CMP requires Transpower to give notice to the Council, that notice can be given progressively, as stages of the work are complete.

Construction hours

13. Construction hours shall be as follows:

a. Monday to Friday: 7am to 6pm;

b. Saturday: 8am to 1pm; and

c. Sundays and public holidays: No work.

Except where work is necessary outside the specified days or hours for the following purposes:

i. Where work is required to be planned to be carried out at low-traffic times, for example, excavation across busy roads, or cable installation;

ii. Delivery of large equipment;

iii. Emergencies;

iv. Securing of the site or removing a traffic hazard;

v. Cable jointing in self-contained enclosures; or

vi. Where the distance between the work and the nearest residence is 100 metres or more and all other conditions are met.

Construction and Maintenance Noise

14. The noise from any construction work activity, must be measured, assessed, and managed in accordance with the requirements of NZS6803:1999 Acoustics–Construction Noise. Construction work is defined in New Zealand Standard NZS6803:1999 Acoustics – Construction noise.

15. A Construction Noise and Vibration Management Plan (CNVMP) must be submitted to Auckland Council for certification prior to commencement of any construction works that cannot comply with the guideline upper limits of New Zealand Standard NZS6803:1999 Acoustics–Construction Noise. The objective of the CNVMP is to identify and require the adoption of the best practicable option to minimise construction noise and vibration effects as far as practical.

16. The CNVMP required by condition 15 must be submitted to the Council's Consents Manager, Resource Consents South, for certification a minimum of twenty (20) working days prior to commencement of the works commencing. Construction works must not commence until certification has been received in writing from the Council. Certification must not be unreasonably withheld.

Advice note:

The CNVMP required by condition 15 can be incorporated into, and be part of the

construction management plan required by condition 10.

Vibration

17. Vibration from all construction activities shall not exceed the limits of, and shall be measured and assessed in accordance with, German Standard DIN 4150-3 (1999-02) Structural Vibration – Effects of Vibration on Structures.

Traffic / roading

18. Transpower shall prepare a Traffic Management Plan (TMP) which is generally consistent with The National Code of Practice for Utility Operators' Access to Transport Corridors under the Utilities Access Act 2010.

19. The TMP shall be submitted to the Council's Manager, Resource Consents South for approval at least 20 working days prior to commencement of underground cable construction after consultation with:

- a. The Council;
- b. The following key stakeholders:
 - i. Emergency services (including police); Bus operators;
 - ii. Schools;
 - iii. Kāinga Ora;
- c. Any additional key stakeholders identified by the Council.

20. The council shall respond within 20 working days indicating whether approval is given or refused. Approval shall not be unreasonably withheld.

21. The TMP prepared by Transpower shall recognise that the paramount purpose of roads is the free passage of the public and its vehicles.

22. The TMP prepared by Transpower shall address and provide details of proposed works and/or mitigation measures relating to the following matters:

- a. The likely routes for heavy construction-related traffic, the assignment of which should minimise uncontrolled right turn movements and maximise the use of the arterial road network;
- b. Details of any necessary road closures, diversions, or deviations which are likely to be required during construction activities, including the likely date, time and duration of such actions. As far as practicable, any necessary temporary road closures should be effected during off-peak periods;
- c. Where diversions or deviations are required, information and recommendations shall be provided by a suitably qualified and experienced traffic engineer of the traffic volumes and capacities of alternative routes, and the likely consequent effects in terms of safety and convenience. The traffic engineer shall ensure that recommended alternative routes are reasonably convenient and capable of safely accommodating diverted or deviated traffic. Transpower shall act on the recommendations of the traffic engineer in relation to alternative routes. Where traffic modelling related to specific intersections is required, the results of the modelling shall be included (see conditions 23 to 25);
- d. Details of the signage intended to advise motorists, residents, stakeholders, and other road users of any road closures, diversions and delays, including examples of signage for diversion routes.

Such signage shall be sufficiently clear to enable easy understanding by the general public, and installed at appropriate locations at least seven days in advance of such road closures, diversions and delays. Such signage shall include the use of trailer-mounted electronic signs near the most affected roads;

- e. Details of methods of proposed information dissemination regarding construction activities and associated traffic effects. These details shall include information regarding likely timing and duration of works, alternative routes, access to properties, and any alterations to public transport services. Methods of information dissemination shall include, but not be limited to, public notices in newspapers, radio announcements, signage, information packages, and direct contact with affected properties along those routes;
- f. Inclusion of a communications plan setting out the method of consultation and liaison with key stakeholders and affected parties regarding likely timing and duration of works, alternative routes, access to properties and any alterations to public transport services;
- g. Details of prior consultation or community liaison undertaken with affected residents, key stakeholders, schools, public transport providers, emergency services or representative groups regarding proposed road closures, diversions, delays, on street parking changes and any measures agreed with such groups to address any adverse effects or inconvenience that may arise;
- h. Any road diversions, closures, or single lane closures outside Mission Heights Primary School and Mission Heights Junior College must be undertaken, as far as practical, during school holidays or outside school hours.
- i. Details of any measures for the purposes of mitigating adverse traffic effects of construction traffic, including safety matters, relating to cyclists, pedestrians, mobility impaired persons, and school children;
- j. Where the cable is proposed to be installed across major intersections and/or arterial roads carrying higher traffic volumes (such as Ti Rakau Drive, Te Irirangi Drive, Chapel Road, Springs Road, East Tamaki Road), three months prior to the commencement of construction an assessment shall be carried out by a suitably qualified and experienced traffic engineer of:
 - i. The traffic volumes using such intersections or roads; The likely levels of delays and disruptions which may be experienced as a result of cable construction; and
 - ii. Identification of locations where such installation works must be carried out in the most timely manner practicable (including where reasonably practicable, the use of alternative methods of installation other than trenching), so as to minimise delays or inconvenience to road users;
- k. How heavy vehicles must avoid travelling past Mission Heights Primary School and Mission Heights Junior College during peak before and after school travel times, during term time (8.00am to 8.45am and 3.00pm to 3.30pm). Heavy vehicles are classified by size, being any construction vehicle that is larger than the average ute or van and has the potential to reduce visibility on the road.
- l. Details of how truck drivers will be briefed on the importance of slowing down and adhering to established speed limits when driving past schools, and to look out for school children and reversing vehicles at all times.
- m. Following consultation with public transport providers, details of proposed alternative temporary changes to public transport services during the construction period including but not limited to any route diversions, timetable adjustments, temporary bus stops, and methods of communicating such matters to public transport users.

23. Following consultation with the Boards and/or principals of Mission Heights Primary School, Mission Heights Junior College, Sir Edmund Hillary College and Sancta Maria College (and any schools subsequently established with accesses and/or egresses adjacent to the underground cable route), Transpower shall ensure, as far as practicable, that works avoid school terms so as to minimise disruption to normal school activities. Details of relevant periods shall be included in the TMP.

24. Following consultation with Fire and Emergency New Zealand, details shall be provided in the TMP of proposed alternative access to and egress from the fire station located at 341 East Tamaki Road.

25. Transpower shall carry out traffic modelling at the intersections of Johnstones Road/Springs Road/East Tamaki Road and Chapel Road/Accent Drive/Stancombe Road to assess the impact of the construction works on intersection capacity prior to completing the Construction Management Plan and the Traffic Management Plan as required by conditions 10 and 18, and incorporate any necessary specific provisions in the CMP.

Advice note:

The traffic management plan required by condition 18 can be incorporated into, and be part of, the construction management plan required by condition 10.

Continuation of access

26. Transpower shall at all times ensure that access to any property temporarily severed by construction is maintained at a level that will enable, as far as practicable, normal operations on the property to continue.

Parking

27. Following consultation with residents, businesses and other directly affected persons, Transpower shall ensure that adequate temporary alternative car parking is provided for residents, businesses and other directly affected persons along or adjacent to the cable route, in the event that construction activity prevents or hinders usual parking. Such arrangements are to be made and advised to affected parties at least five working days prior to the commencement of the work that causes the effect.

Remediation of property, roads and footpaths

28. Other than as provided in condition 29, Transpower shall:

- a. within 10 working days of completion of construction on any land, reinstate any private or public land and property (excluding works in road reserves) as far as practicable to its pre-existing state. Such remediation shall include fences, gardens (excluding trees and grass) and other surface equipment or materials; and
- b. as soon as practicable after the completion of construction, re-grass areas that were previously grassed.

29. As soon as practicable after the completion of construction, Transpower shall repair any damage to public carriageways, footpaths (and associated road components) and public transport corridors resulting from the impacts of construction. Such repair may involve short-term maintenance to allow for settling and consolidation of carriageways prior to final repair.

Cultural/Spiritual

30. If any urupā, traditional sites, taonga (significant artefacts), or kōiwi (human remains) are exposed during site works, the following procedures shall apply:

- a. Works in the immediate vicinity of the site that has been exposed shall cease;
- b. The site supervisor shall immediately secure the area in a way that ensures that any remains or artefacts are untouched;
- c. The site supervisor shall notify representatives of relevant tāngata whenua, Heritage New Zealand, the Auckland Council and, in the case of human remains, the New Zealand Police; and

- d. The notification in (c) above shall allow such persons being given a reasonable time to record and recover archaeological features discovered before work may recommence on the exposed site.

Post-construction

31. Transpower will, as soon as practicable following completion of the cable works:
- Review the width of the area designated for the project; and
 - Identify any areas of designated land that are no longer necessary for the on-going operation, maintenance, renewal and protection of the underground cables and ancillary activities; and
 - Remove the designation over any surplus areas identified in (b) above in accordance with section 182 of the Act and provide a plan of the final designated areas to the Council for inclusion in the Auckland Unitary Plan.

Future roading

32. Cable installed in the vicinity of the possible future road connections between:
- Kitenga Road and Ormiston Road;
- and
- Redoubt Road and Brownhill Road shall be buried to a depth that does not prevent construction of those roads due to the presence of the cables in the future.

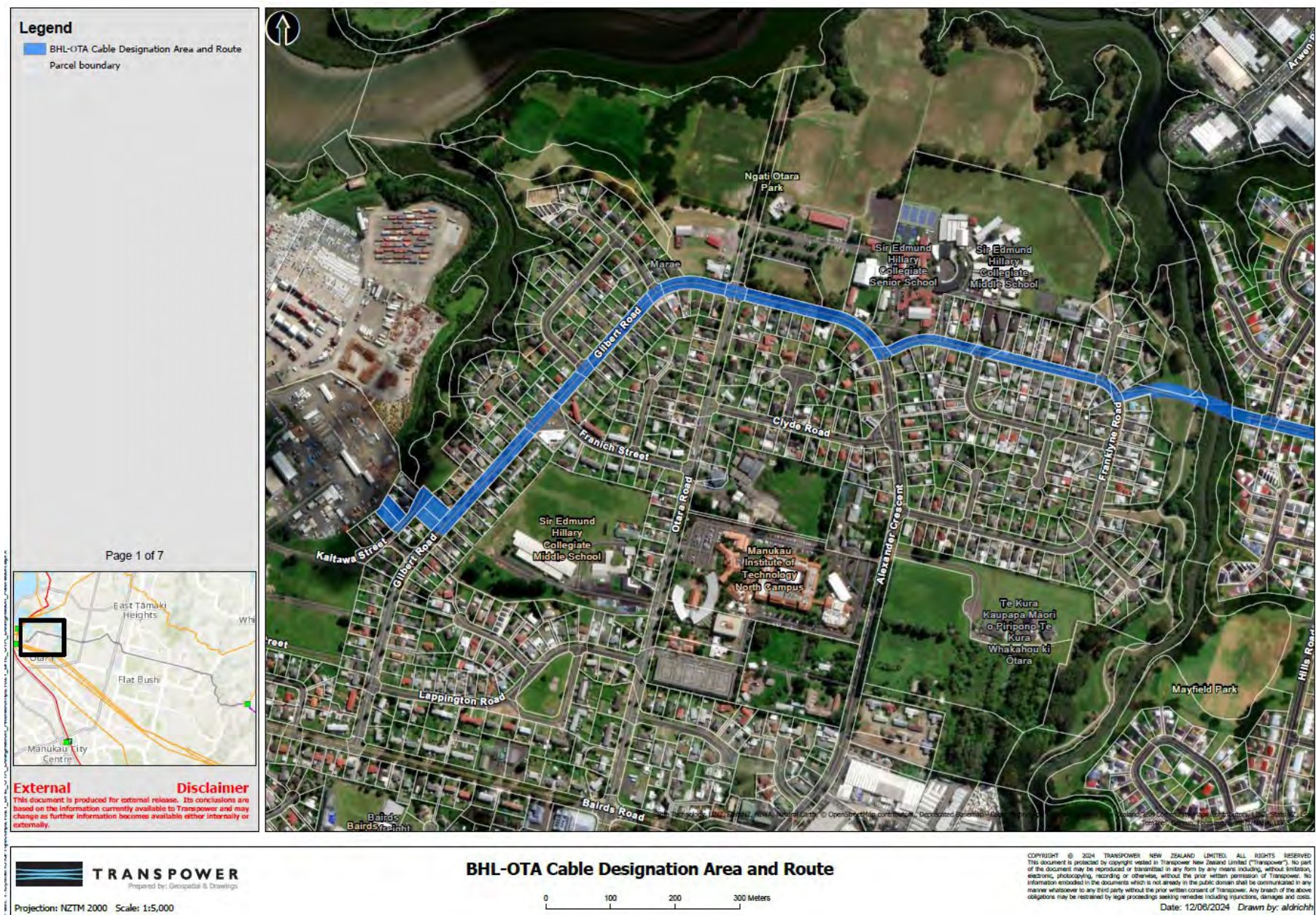
Auckland Transport

33. The Requiring Authority (Transpower) shall not require Auckland Transport to seek written consent under Section 176(1)(b) of the RMA for the following activities associated with the routine operation, maintenance, replacement and urgent repair of its roads and Bus Rapid Transit:

- Road marking; and
- Road resurfacing and repairs, and replacement kerb and channel, with excavations less than 500mm in depth; and
- Installation or reinstallation of signs and support posts with excavations less than 500mm in depth.

Advice notes:

- Any new works or equipment means those works which were not existing prior to the notification of the Auckland Unitary Plan.
- Where the Transpower BHL-OTA designation and the Auckland Transport Bus Rapid Transit – Botany to Rongomai Park designation overlap at the intersection of Ti Irirangi Drive and Accent Drive, during the construction of the earlier project at this location, Transpower and Auckland Transport will endeavour to align timing of construction activities where practicable to minimise the disturbance of the earlier project's operation when construction for the later project occurs.



Legend

- BHL-OTA Cable Designation Area and Route
- Parcel boundary

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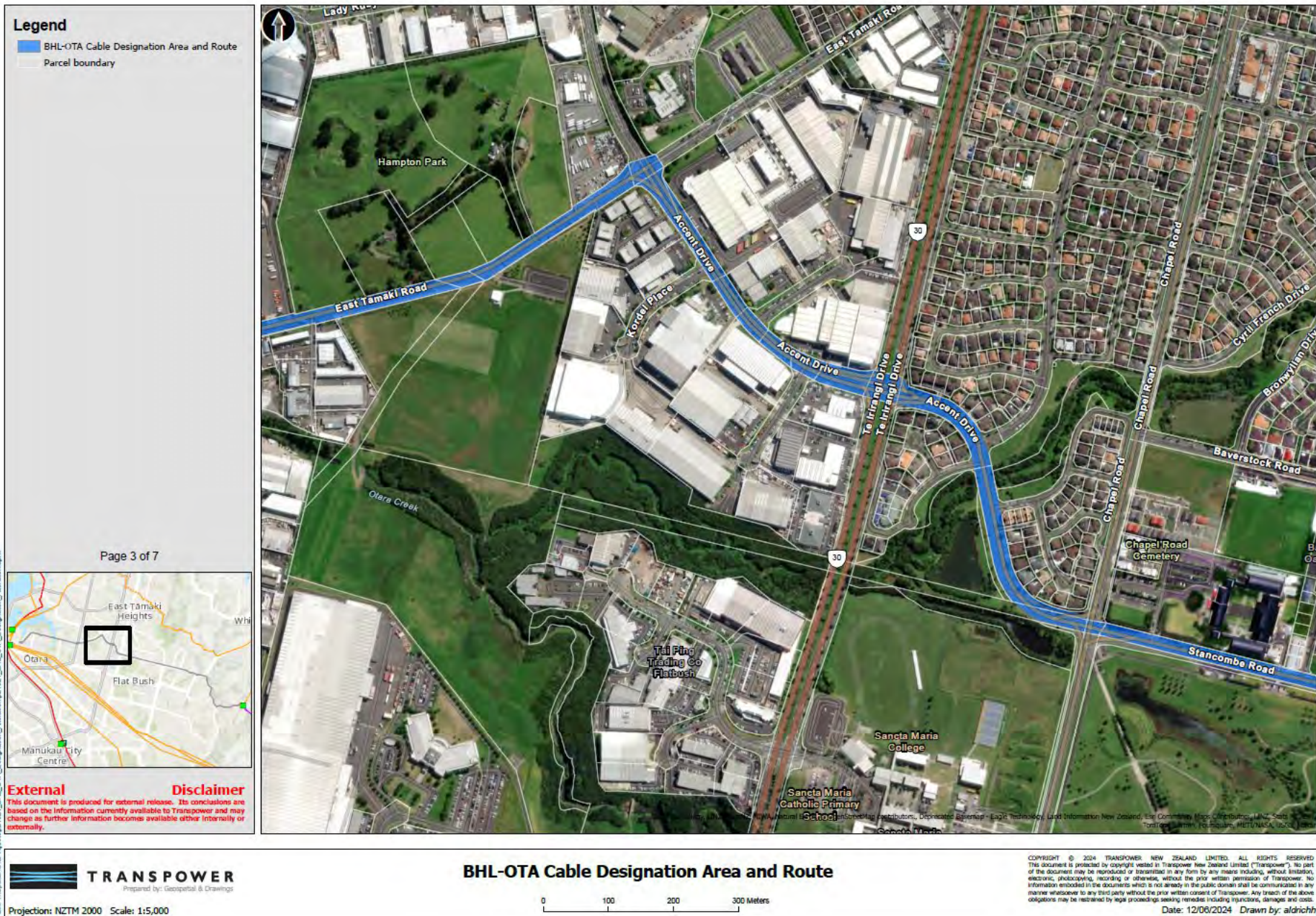
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Projection: NZTM 2000 Scale: 1:5,000

BHL-OTA Cable Designation Area and Route



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Legend

- BHL-OTA Cable Designation Area and Route
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BHL-OTA Cable Designation Area and Route



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Legend

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- Parcel boundary

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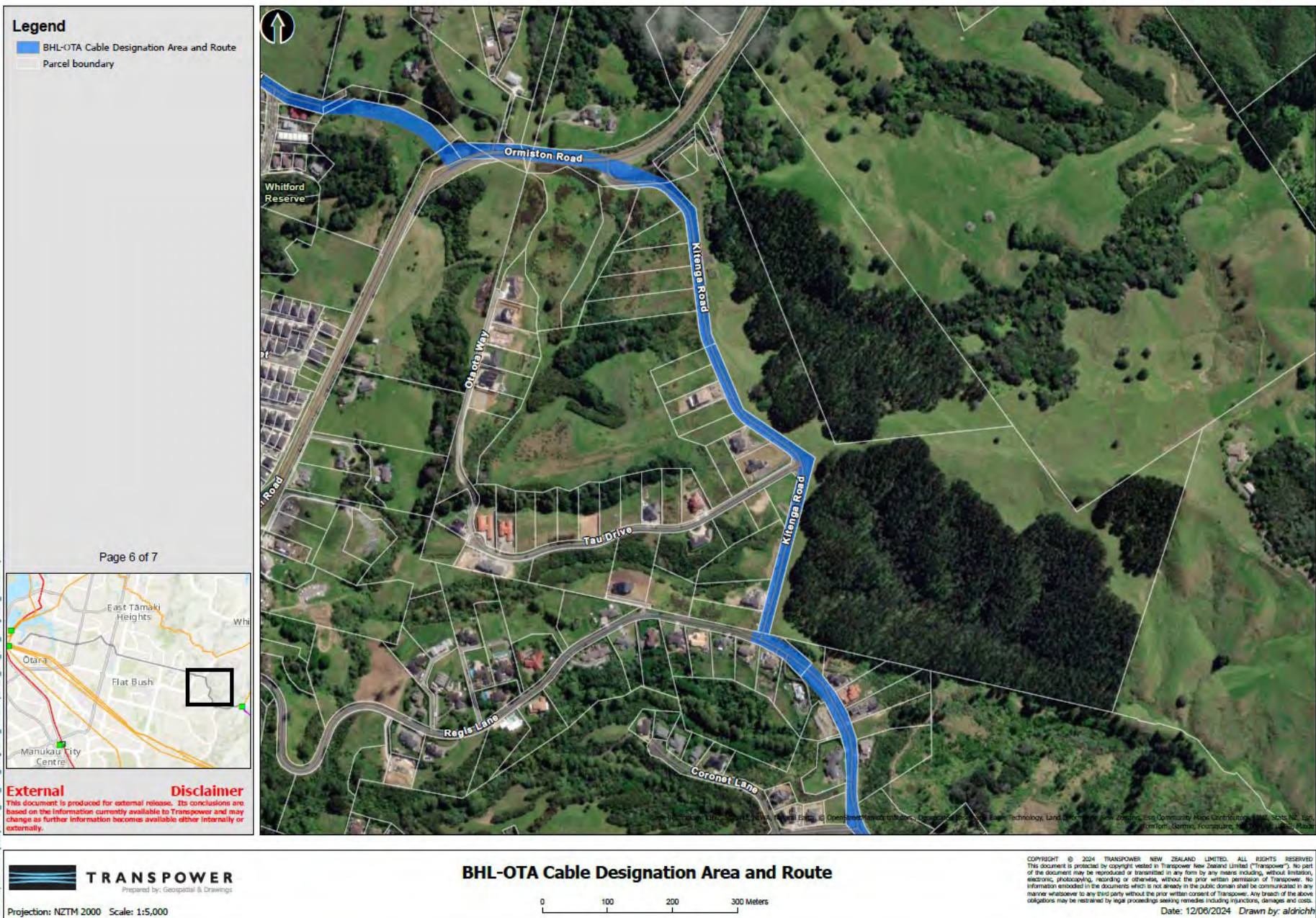


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BHL-OTA Cable Designation Area and Route



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Schedule of Legal Descriptions

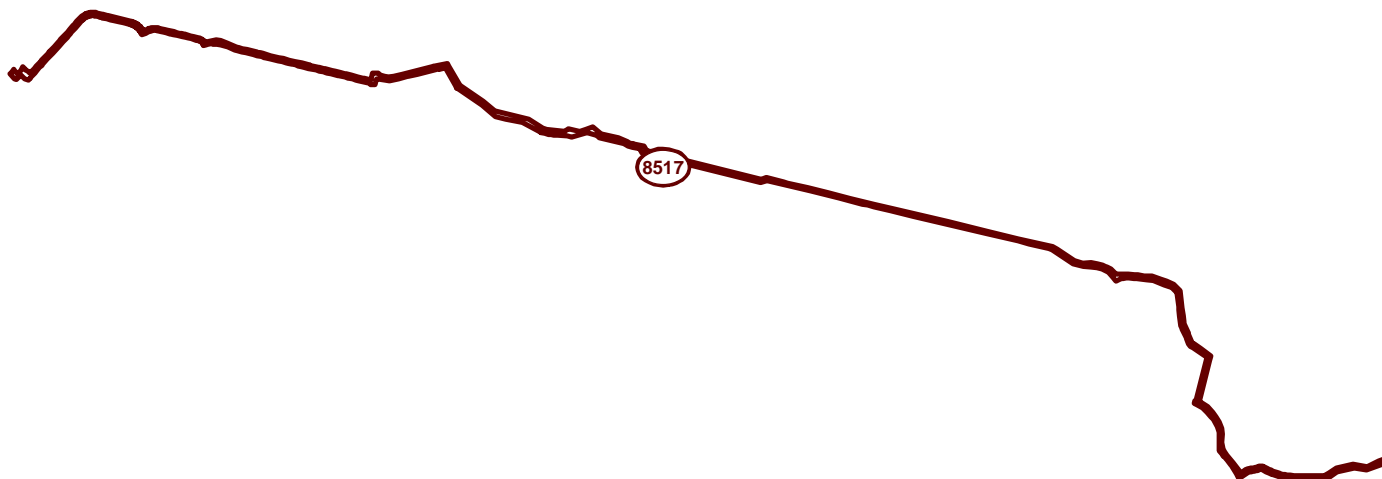
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5168529	Lot 44 DP 122457
4701869	Lot 45 DP 122457
5220406	Road
5245483	Road
5229707	Road
5242071	Road
5234115	Road
5247685	Road
5234114	Road
5253250	Road
5211477	Road
5243048	Road
5235744	Road
5245975	Road
5209287	Road
5259209	Road
5217576	Road
4755221	Allot 355 PSH OF Manurewa
8028879	Section 2 SO 541424
5099005	Reclaimed Crown Foreshore Survey Office Plan 47238
5267324	Hydro
4808525	Lot 279 DP 50344
5214856	Road
5247445	Road
5237621	Road
5247453	Road
5208934	Road
5247449	Road
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5263411	Road
6746089	Lot 1018 DP 340679
6755102	Lot 1019 DP 348822
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7103669	Road
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5208692	Road
5257462	Road
5208693	Road
7781813	Lot 502 DP 507828
7743019	Lot 500 DP 500844
5263387	Road
6841781	Lot 74 DP 353601
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7656677	Lot 23 DP 486594

Attachments E

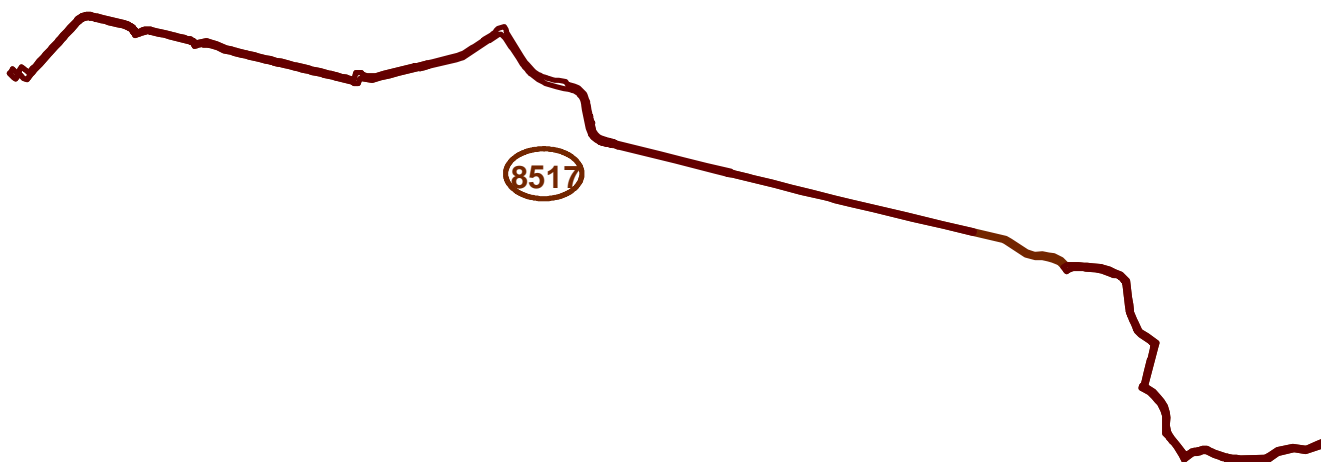
AUP GIS Viewer (Before and After)


BEFORE



 Designation

AFTER



 Designation

0 360 720 1,440 Metres

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Date: 7/07/2025

Before after map - D8517
Transpower alteration and partial removal of
designation 8517